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ABSTRACT

By embracing education as an economic development tool, policy makers adopt a new economic metaphor--a new way of understanding how the economy works and identifying determinants of development. Development policy has shifted focus, from providing incentives for the accumulation of physical capital to emphasizing investments in human capital. Most states espouse the belief that education is their most important economic development tool. It is important to trace how this mixing of metaphors has come about and what it has meant for economic development strategies. Education has displaced industrial policy and evolved into one of the most powerful metaphors of economic development, and the five substantive chapters of this paper analyze this process. Chapter 2 examines how metaphors are used as the basis of national economic policies; chapter 3 describes development policies derived from traditional mercantile metaphors; chapter 4 describes how many states have reformulated their development metaphors over the past decade to play a much larger role; and the final chapter outlines how state development policies change to reflect these new metaphors--by means of measures to improve the basic and occupational skill of the work force, measures to promote greater entrepreneurial awareness and abilities, and measures to equip disadvantaged people to compete better in the mainstream economy. (110 reference notes) (NLA)

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MIXING METAPHORS: EDUCATION AND ECONOMIC DEVELOPMENT POLICY

Roger J. Vaughan
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December 1989

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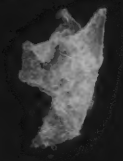

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PREFACE

The National Center on Education and Employment is funded by the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education. The Center is based at Teachers College, Columbia University, in New York City. The RAND Corporation of Santa Monica, California, and Washington, D.C., is a partner with Teachers College in this enterprise.

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The usual caveats apply. The author remains responsible for sins of omission and commission.

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INTRODUCTION

> *Organizational design, plant layout, systems of quality control, and a host of other considerations are but empty shells until given life by the skills, relationships, expectations, and capacity for learning embodied in the work force. This reservoir of human talent and adaptability is a long-lived asset, which like all assets requires constant investment and careful nurturing. Unlike other assets, however, it is the primary determinant of what a company can or cannot do over the long run—that is, of a company's ability to respond to change.*
>
> William J. Abernathy, Kim Clark, and Alan Kantrow, 1983

During the 1980s, education became a major tool employed by state and local governments to promote economic development. Governors who had run on platforms of "jobs, jobs, and jobs" at the beginning of the decade campaigned for re-election on the promise of educational excellence.[1] In Washington, Congress has linked education to international competitiveness and both presidential candidates in 1988 promised to be "education presidents."

By embracing education as an economic development tool, policymakers were doing more than simply responding to a new fad. They were adopting a new economic metaphor—a new way of understanding how the economy works and identifying determinants of development. Development policy has shifted focus, from providing incentives for the accumulation of physical capital to emphasizing investments in human capital.

MERCANTILISM: THE METAPHOR OF THE MISER

> **Metaphor:** n. *The figure of speech in which a descriptive term is transferred to an object that is different from, but analogous to, that which it is properly applicable.*
>
> Oxford English Dictionary

Two hundred years ago, as today, nations competed for economic power. But in the eighteenth century, the goal was not jobs but the accumulation of gold. Nations built economic development strategies around elaborate trade monopolies, prohibitive customs duties, and even state-subsidized piracy.

Mercantilists were persuaded by the plausible metaphor of the miser who achieved wealth by hoarding money or precious metals. Could not nations also become rich by accumulating gold? But Spain's success in amassing gold was rewarded with rampant inflation and centuries of economic stagnation.

In 1776 Adam Smith published *The Wealth of Nations* to demonstrate why the policies derived from the mercantilist metaphor would not work.[2] "That wealth consists in money, or in gold and silver, is a popular notion," he argued, "which naturally arises from the double function of

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[1] By 1986, a survey by the National Governors Association found at least 20 states had undertaken major education initiatives to improve their economies. See Marianne Clarke, *Revitalizing State Economies*, Washington D.C., National Governors Association, 1986, p. 3.

[2] Adam Smith, *The Wealth of Nations*, originally published in 1776, and, more recently in New York by Random House, 1937.

money, as the instrument of commerce and as the measure of value...The great affair, we always find, is to get money. When that is obtained, there is no difficulty in making any subsequent purchase."[3] But the desire for money, Smith pointed out, was a desire for the things that it could purchase.

Mercantilism failed because its metaphor was inappropriate. What applies to the actions of individuals does not necessarily apply to the actions of society as a whole. Gold makes the miser rich only because it can purchase goods and services produced by others. The nation that fills its treasury with gold is richer only if it has also expanded its *capacity* to produce goods and services or its command over the goods and services produced by others. If not, its extra money simply drives up prices: inflation erodes wealth and the pursuit of gold diverts people from more productive enterprises.

If a nation's wealth does not lie in its store of gold, where does it lie? Adam Smith argued that the "labour of every nation," not gold, was its source of wealth, and that "the skill, dexterity, and judgment with which that labour is applied" determined its value.[4] Smith offered learning as an alternative metaphor to that of the mercantilists. His *Wealth of Nations* opens by describing how economic development depends on the increasing specialization of labor, and, borrowing an image developed by Sir William Petty nearly a century earlier, described the productivity gains in a pin factory in which employees each performed highly specialized tasks.[5] "The greatest improvement in the productive powers of labor," Smith asserts, "seem to have been the effects of the division of labor." Wealth was not a tangible stock that could easily be devalued or exhausted, but a dynamic capacity to produce goods valued by consumers.

Economic development, Adam Smith argues, advances when we learn to produce new goods and services, when we learn better ways of making things, or when we learn of new markets in which to operate. Our ability to learn is sharpened through education. Therefore, of the many activities that promote development, education and training (including on-the-job-training) is the most important.

Scotland in 1776 offered convincing evidence for the importance of education in creating wealth. Inhabiting a bleak terrain, bereft of natural resources, and victim of a hostile climate, Scotland nevertheless boasted a strong economy and little poverty. Its asset was an education system that was arguably Europe's finest. Intransigent Scots' nonconformity had separated church from schoolroom. As a result, Scottish engineers succeeded where their military ancestors had failed and overthrew English society by spurring an industrial revolution with a stunning series of inventions that included the steam engine and the paved road. Scholars of all disciplines from Bishop Berkeley and David Hume to Adam Smith himself made Scottish Universities the equal of any in the world.

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[3] Ibid, p.398.

[4] Ibid, p.3.

[5] Sir William Petty, a seventeenth century English politician and writer had observed: "Money is but the fat of the body politic, whereof too much doth as often hinder its agility as too little makes it sick...[L]abor is the father and active principle of wealth as lands are the mother....Cloth must be cheaper made when one cards another spins, another weaves, another dresses, another presses and packs than when all these operations are clumsily performed by the same hand." See "Political Arithmetick," in *The Political Writings of Sir William Petty*, ed. J. Hull, London, 1690, p.260.

Despite the reasonableness of his arguments and the failure of mercantilist policies, *The Wealth of Nations* failed to shape economic development policies for two hundred years. While his metaphor of the invisible hand was adopted—because it offered a convenient excuse for overlooking the less pleasant consequences of industrialization, the mercantilist acquisitive metaphor proved more plausible and politically appealing than Smith's emphasis on human capital. Mercantilism justified government protection of capitalist power. In the twentieth century, the development policies followed by state governments in the U.S. used mercantilist arguments and strategies to capture jobs—not gold.

In the last decade, however, policymakers have rediscovered Adam Smith's insights. Today, most states espouse the belief that education is their most important economic development tool. This paper traces the how this mixing of metaphors has come about and what it has meant for economic development strategies.

THE ECLIPSE OF MERCANTILISM

> *A quarter of a century ago, companies looked for cheap labor, cheap power, and good transportation. Physical infrastructure was the key. Today companies look for educated workers, excellent universities, entrepreneurial climates, and an attractive quality of life. Good roads are still important, but intellectual infrastructure is the key.*
>
> David Osborne, *INC Magazine*, 1987

Nowhere was the growth in importance accorded to human capital more pronounced than in Mississippi. In the 1930s, Mississippi invented modern state development policy. To diversify its desperately poor agrarian economy, it created a Balance Agriculture With Industry program in 1936, that, for nearly half a century, successfully recruited manufacturing plants with an impressive array of inducements—including low-interest loans, tax abatements, tax exemptions, and boasts of cheap and pliable labor.

But this success left Mississippi the poorest and most backward state—albeit a little closer to the median. In 1982, Governor William Winter signalled a new approach: in the name of economic development he raised taxes and dedicated the revenues to education. "If we don't have an educated citizenry," he argued during the bitter legislative debate, "then I don't think we've accomplished anything."[6] Other states have followed. Today, every governor and state legislature has enacted an education strategy in the name of economic development. Education has been elevated from a social program to the state's primary economic development initiative.

Traditional state development policies were in difficulty by the end of the 1970s. There were fewer branch plants to recruit: by one estimate there were five development agencies chasing each footloose firm that employed more than 200 people.[7] Abating state and local taxes left

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[6] Cited in Neal Peirce and Jerry Hagstrom, *The Book of America*, New York, W.W. Norton, 1983.

[7] Roger Schmenner estimates there were only about 400 major new plants or relocations in 1979 (see *Making Business Location Decisions*, Englewood Cliffs, N.J., Prentice Hall, 1982). Albert Shapero counted over 4000 local development agencies at least one half of whom were seeking to influence those decisions ("Entrepreneurship: The Key to Self-Renewing Economies,"

communities short of revenues and did not guarantee that the subsidized business would endure. And most new jobs were no longer in manufacturing—the sector that had been the principle target of state development efforts. The nation's economy—and the economies of many manufacturing communities—were performing poorly: U.S. productivity growth had fallen below zero by 1980, manufacturing employment was shrinking, major plants were closing, and the U.S. share of world markets was falling.

Education was not the most obvious approach to economic development to replace industrial recruitment. Although Adam Smith had cogently argued over two hundred years ago that the wealth of nations lay in the skills and management of their workforces, development policies were still derived from the acquisitive metaphor that he had vigorously attacked. In 1980, industrial policy, not education, seemed the most vigorous candidate to shape economic policy in the 1980s. Industrial policy depended on the negotiation among industry and public leaders to set investment strategies . It paid little attention to investing in people.

REDISCOVERING THE WEALTH OF NATIONS

Life must be lived in the future, but it can only be understood from the past.
Soren Kierkegaard, 1851

Education and knowledge re-entered our economic metaphors as a result of four quite distinct trends. The most obvious trend is the elevation of the economics of human capital—the belief that development requires not only tools but craftsmen to use them. The second trend has been the growing recognition of the importance of the entrepreneur—the realization that growth depended not only on investments but on investors alert to opportunities and willing to take risks. The third trend has been the growing scarcity of skilled labor. The fall in the number of new entrants to the workforce has changed the focus of development policy. Finally, mounting empirical evidence contradicted the metaphors from which economic developers had derived their recruitment-oriented strategies.

OUTLINE

Education has displaced industrial policy and evolved into one of the most powerful metaphors of economic development. This paper analyzes this process. The following chapter analyzes how we use metaphors as the basis of our economic policies. The third chapter describes development policies derived from our traditional mercantilist metaphors. The fourth chapter describes how many states have reformulated their development metaphors over the past decade—including people—as workers and as entrepreneurs—to play a much larger role. The final chapter outlines how state development policies are changing to reflect these new metaphors: measures to improve the basic and occupational skill of the workforce, measures to promote greater entrepreneurial awareness and abilities, and measures to equip disadvantaged people to compete better in the mainstream economy.

Commentary, The Council for Urban Economic Development, 1981).

ECONOMIC METAPHORS AND ECONOMIC POLICY

Knowledge is always gained by the orderly loss of information, that is, by condensing and abstracting the great buzzing confusion that comes from the world around us into a form that we can appreciate and comprehend.

Kenneth Boulding, 1976

How we promote economic development is determined by how we believe the economy works. Because the economy is too complex for us to comprehend in its entirety, we all carry in our heads our own economic models—models that abstract the buzzing confusion of the real world through amalgams of our formal economic training, personal experience and values, and metaphors through which we interpret and impose order on our perceptions. Although economists have developed a science of model *testing*—using statistics, logic, and, sometimes, efficacy—the basic business of developing models remains an art.

When we build our models, we select key "variables" that we believe influence development. We chose from millions of candidates, reflecting widely-held views colored by personal experience, formal education, the media, and the political environment. When Keynesian economics was widely taught in universities, for example, we viewed economic events in terms of how they affected, or reflected, shifts in the aggregate demand for goods and services. Today, we might include different variables: should we emphasize tax rates or government spending, scientific discovery or consumer income, the money supply or interest rates, the value of corporations or their market concentration, the President's health or sun spots to explain changes in the rate of growth?

We must also specify how variables are related. Does an increase in taxes reduce growth by discouraging investment or stimulate it by reducing government borrowing? Do unemployed people drive down the price of labor and encourage economic expansion or reduce their purchases and so deter growth? Will an outburst of mergers and takeovers discourage competition or provide for cooperative research ventures that promote growth?

Unfortunately, we cannot test through controlled laboratory experiments either our selection of variables or the relationships we have assumed. Thus economics is denied the elegant tests and rigorous proofs that have elevated physics to the most respected of the sciences.

To guide us in building plausible economic models, we use metaphors—familiar analogies that we believe to be appropriate, simplified microcosms of the larger universe. Too often, however, metaphors are misleading. They emphasize the obvious at the expense of the important. For example, the pre-eminent but indirect and long-term role of education in shaping economic development has not lent itself as easily to metaphor as have more concrete factors—infrastructure and investments in plant and equipment.

Development practitioners have used the plausible metaphor offered by mercantilists. It forms the foundation of development strategies that concentrate on gathering jobs by amassing factories, research centers, domed stadia, or federal dollars. They have overlooked the fundamental flaw of the mercantilists that Adam Smith pointed out: wealth is determined by the power to produce, not by the accumulation of tangible property. And the most important determinants of that power are the skills and industriousness of people.

WE ARE RARELY ABLE OR WILLING TO TEST ECONOMIC MODELS RIGOROUSLY

> *There may well exist better 'scientific' evidence for a false theory, which will be accepted because it is more 'scientific', than for a valid explanation, which is rejected because there is no sufficient quantitative evidence for it.*
>
> Friedrich Hayek, 1974

Despite Adam Smith's fame, his metaphor has not been widely adopted by economists and policymakers in the ensuing two centuries. The mercantilist metaphor has proved more plausible—witness the enduring support for trade restrictions as a way to strengthen the national economy—and has lent itself more easily to justify politically attractive actions. (The following chapter explores the mercantilist policies that state governments have employed over the last fifty years.)

Mercantilism persisted and education was overlooked for two reasons: first, it was extremely difficult to invalidate the plausible miser metaphor; unlike physical capital, for example, human capital is less tangible than jobs, and not as easily measured; and second, education and skills are acquired through a highly decentralized system—relying on individual initiative, the acts of employers, and the services of a wide net of institutions. Large-scale capital investments, on the other hand, are highly visible, and the numbers of people involved are small enough to be tracked by public development officials.

Testing Models

We continually test our economic metaphors in three ways: by exploring their internal logical consistency; by comparing their predictions against data from the real world; and by assessing the efficacy of the policies that we derive from them. But these tests are rarely definitive. Without laboratory experiments, we can rarely test among competing explanations for economic phenomena. And, most important, we often do not want to abandon our metaphors, however strong the contradictory evidence.

As a result, economists starting from a common set of assumptions disagree about basic questions of policy. Economist Melville Ulmer offers a sampling of important questions to which flatly opposing responses are provided by notable authorities:

> Would a substantial increase in tax rates raise or lower government revenues under present circumstances? Can the threat of renewed inflation be exorcised more effectively with tight money (to raise interest rates and diminish investment) or by looser reins (to increase output and productivity)? Do periodic boosts in the minimum wage reduce poverty or do they create unemployment, stimulate inflation, and hence spread poverty? Would a more liberal immigration law raise or lower the prosperity of the American public as a whole? Has the distribution of income grown more or less equal over the last twenty or thirty years?[8]

Operating with such uncertainty, it is easy to understand the difficulty of gaining widespread agreement over the relative roles of education and physical capital investments in economic development.

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[8] Melville J. Ulmer, "Economics in Decline," *Commentary*, November 1984, p.43.

Model testing is not always—indeed, is rarely—objective because power and influence rest on the validation of models. The mercantilist view of the world endured in part because it placed economic power and control on the state, including the control of trade and the creation and distribution of economic monopolies. An emphasis on human capital, on the other hand, would reduce this power. Therefore, even if experience contradicts our model we may not surrender willingly. Changing models takes effort. We seek extenuating circumstances for the mounting evidence of the failings of traditional views. There may be no better models to replace the old one. Or the switch—from Keynesian to supply side economics, for example—may require investing time and effort to prepare new lecture notes, to read new books, and to adopt new ways of thinking about the world. Habits of thought are hard to shake.

But, more importantly, changing models may mean the loss of power and influence. When St. Augustine stated that demons caused disease, he established church exorcism as the basis of medical control—a profitable position the church succeeded in defending for nearly one thousand years by repressing medical knowledge.[9] No economic theories have lasted as long, although some have achieved almost as widespread acceptance with as little logical foundation.

Logical Consistency

Economists defend their models by arguing for their logical consistency: but that is an internal test and has little to do with how well models explain the real world. In his recent memoirs, Nobel laureate George Stigler laments:

> At leading centers of economic theory....it has been the practice to ask: Is the new theory logically correct? that is a good question but not as good as a second question: Does the new theory help us understand observable economic life? No one will ever deny the desirability of eventually answering the second question, but many economists prefer to leave that question for a later time and a different person to answer. That division of labor is quite proper, but until the second question is answered a theory has no standing and, therefore, should not be used as a guide to public policy.[10]

The rigorous mathematical models, beloved of a generation of economists raised with computers, score highly when judged according to their internal consistency. But, one critic argues, the "mathematical revolution reinforced the three major flaws that debilitate mainstream economics today...[1] its nearly exclusive reliance on deductive reasoning; [2] a preoccupation with the static concept of equilibrium; and [3] the oversimplifications required to match actual data with mathematical abstractions."[11]

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[9] Jonathan Miller, *The Body in Question*, New York, 1978, chapter 2.

[10] George Stigler, *Memoirs of an Unregulated Economist*, Chicago, University of Chicago Press, 1988, p.212.

[11] Ulmer, Op.Cit., p.44. Ulmer is not alone. Consider the titles of some recent books and articles: *What's Wrong with Economics*, Benjamin Ward; *Economics is Not A Science*, ed. Alfred Eichner; *The Crisis in Economic Theory*, Irving Kristol and Daniel Bell, eds.; "Theoretical Assumptions and Observed Facts," Wassily Leontieff.

Empirical Support

Economic data are not only unreliable in themselves, but by focusing on the measurable, we often omit the important. We construct models that are empirically elegant, but inappropriate from the perspective of making policy decisions. Hayek argues:

> Unlike the position that exists in the physical sciences, in economics and other disciplines that deal with essentially complex phenomena, the aspects of the events to be accounted for about which we can get quantitative data are necessarily limited and may not include the important ones.[12]

Relying on the measurable leads us to misspecify our model. For example, after watching a construction crew laying a highway, we build into our model a relationship between increases in employment and increases in government spending—a relationship that has shaped federal and state development policy for fifty years.

Yet by including only what we see, we overlook hidden but equally powerful forces. Where have the funds to pay for the highway construction come from, and what were the economic consequences of collecting them? Whether from taxes or borrowing, raising the money displaced economic activity elsewhere—that which would have resulted from leaving the money in the taxpayers' pockets. A model that specifies that government spending creates jobs omits important relationships, fails to explain what is going on, and will lead us to make the wrong policy decisions. Education operates invisibly, and so we overlook its pervasive influence on development.

All of us, therefore, including economists, embrace a tangle of inconsistent and incomplete models, reflecting not our intellectual shortcomings, but the complexity of the phenomenon to be explained.

Policy Efficacy

The most relevant but most difficult test of models is the efficacy of the economic policies they imply. But economic conditions may improve through spontaneous remission as easily and perhaps more often than through the therapeutic influence of economic development policies. And if the policies are responsible, policymakers must be able to persuade the public that they deserve the credit.

Economic policymakers are in a similar position to that of physicians, who must not only decide how to deal with a patient, but must also persuade the patient of their competence:

> A successful healer must identify himself with some principle which is popularly accepted as the basis of medical control. He must persuade people that his methods exemplify something they are predisposed to regard as medically effective. This applies as much to the clients of a faith healer as it does to the patients who visit a modern cardiologist.
>
> A practitioner's effectiveness may be seen either as the expression of supernatural power—some force or energy which flows from him and produces results without the intervention of skill or techniques—or as the product of special knowledge. Healers of the first group are for their followers the trustees and distributors of a

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[12] Hayek, "Nobel Memorial Lecture," Stockholm, December 11, 1974, p.2.

> miraculous gift, whereas members of the second group are regarded as the practitioners of a material skill...If [patients] turn away it is not necessarily because they are not satisfied with results, but because they no longer accept the rationale on which it is based.[13]

When Mississippi Governor William Winter first introduced legislation to change that state's approach to development, he lost. He had failed to persuade the public of the plausible basis of his education reform package. After deploying staff to repeat the message—backed by a package of telling statistics—that Mississippi's economy was in trouble because of the state's poor education system, he succeeded. The "efficacy" test of an economic metaphor, therefore, is both the impact and the persuasiveness of the policies it implies.

ECONOMIC MODELS ARE BUILT FROM WHAT IS MEASURABLE

> *It is only by using their tools on observed facts that economists can build up that working model of the actual world which [it] is their aim to construct.*
>
> Joan Robinson, 1934

Regional and urban growth models—popular during the late 1960s and early 1970s were calibrated in terms of the number of workers and the dollar value of capital investments.[14] Most models are derived from the neo-classical theory of the firm in which the profit-maximizing firm selects the production process and the level of output in response to market demand for its output and to the price and availability of factors of production. Although it enjoys watertight logical consistency, this theory of the firm owes little to observation of the real world. In accepting his Nobel prize for economics in 1978, Herbert Simon asked:

> What then is the present status of the theory of the firm? There can no longer be any doubt that the microeconomic assumptions of the theory, the assumptions of perfect rationality, are contrary to fact. It is not a question of approximations: they do not even remotely describe the processes that human beings use for making decisions in complex situations.[15]

Economic theory maintained a tripartite distinction among the factors of production: Land, Labor, and Capital. Land was measured by access to other markets or sources of raw materials, labor was counted by the number of people, and capital by the dollar value of investments in plant and equipment.

Two basic types of growth models have been developed: those driven by the variations in factor prices or availability; and those driven by spatial variations in the demand for goods and services.

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[13] Miller Op.Cit. p.58.

[14] For a review of different approaches to development and growth models, see Hahn and R.C.O. Matthews, "Growth Models" *Journal of Economic Literature*, 1968, and Harry Richardson, *Regional Growth*, London, Penguin Books, 1974.

[15] Herbert A. Simon, Nobel Acceptance Speech, 1978.

Factor-Supply-Driven Growth Models. The unit of analysis is the region rather than the firm. These models emphasize the importance of shifts among regions in factors of production. They assume that regions face infinitely elastic demands for output (i.e., the rest of the country will purchase whatever the region produces at current prices). Growth occurs only if local factor supplies increase or if local factor prices decline. The model, explicitly or implicitly, is responsible for states' focus on attracting capital to a state through subsidizing the costs of investment (through business tax abatements, the acquisition and improvement of land, etc.) and on ways of reducing the cost of labor (through customized training programs, right-to-work laws, etc).

These models emphasize amenities that make communities attractive places to live. They have been widely applied and tested with statewide data. Borts and Stein, for example, assumed that labor force growth rates were determined exogenously and that the prices of regional imports, exports, and domestically produced and consumed goods and found, not surprisingly, that regional differences in growth were determined by differences in the labor force growth rates.[16]

These models proved useful for analyzing the links between increases of factors and the level of economic activity. For example, regions experiencing increases in population or labor force because of a favorable climate, perhaps, could estimate the likely growth in resulting employment or output over time. But they were limited. They ignore entrepreneurship and any of the factors that influence the birth rate of new enterprise and innovation. And they ignore the fact that labor force growth is, in part, the result of people moving in response to the growth in jobs.

Demand-Driven Growth Models. These focus on the importance of an increase in demand in stimulating growth. Factor supplies are assumed to adjust to changes in demand with no change in price. Regions are assumed to grow in response to increases in the demand for their exports and to increases in public expenditures on goods or construction. Increases in demand generate higher incomes in export sectors which, in turn, generate income and jobs in other local sectors through local multipliers. Viewing the world through these models has led to emphasis on strengthening export industries as the basis for growth and to increasing public spending to stimulate employment during recessions. These models have also contributed to the energetic pursuit of federal funds, regardless of how the funds are spent, in the belief that dollars from outside will stimulate local expenditures.

Within the simple version of the demand model, the level of regional demand is determined by the level of regional income, which, in turn, is determined by the level of regional employment. A region can grow only if there is an external shift in extra-regional demand for the region's output. Not surprisingly, these models came to be known as export-base models. In most models, a state's export sector was assumed to consist of manufacturing and agriculture.

Export demand stimulates output and employment in other sectors through a multiplier. The logic, briefly, is that if an extra dollar flows into a region from increased export sales, some will be saved, some will be spent on goods and services produced outside the region, and some will be spent on locally produced goods. The larger the amount saved and the more that is spent on imported goods, the smaller the multiplier. For employment in the region to increase in response to an increase in export sales, either there were some unemployed labor and unused capacity or factors could be brought in from the outside. As a region develops, the share of local expenditures that is spent on imports shrinks as import-substitute industries develop.

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[16] See G.H. Borts and Jerome Stein, *Economic Growth in a Free Market*, New York, Columbia University Press, 1964. Similar findings were reported by Harvey S. Perloff and Vera Dobbs, *Regions Resources and Economic Growth*, Baltimore, Johns Hopkins Press, 1960.

Demand-driven models can project the short-run impact of an increase in federal spending in the state or how the expansion of one of the state's export industries will, in the short run, influence local employment in the area. For example, a simple demand model could be used to predict how the development of an energy resource will shape the local economy so that appropriate state mitigating strategies can be developed.

These models assume that all relationships in the region's economy remain fixed over time, which is unlikely. The simplest and most usable versions of the models assume that only growth in exports can stimulate growth; these versions have no place for entrepreneurship, innovation or investment. Third, the concept of an export sector is not easy to define in the real world—much manufacturing is undertaken to meet local demand, and many service industries can be export driven.[17] Fourth, the models assumed unused resources and no "supply side" constraints on development.

Although they are simple, these models suffer from two serious problems. First, the variables do not correspond directly with demand and supply determining factors—for example, does population growth measure a change in consumer demand or a change in the availability of labor. Second, the model assumes a "one-way" relationship between the independent and dependent variables. Population growth is viewed as an exogenous force leading to employment changes. Yet the interaction between employment and population is more complex than that—employment growth will attract migrants seeking work just as an expansion of population may attract firms to the growing market.

The tradition of economic models, therefore, has tended to support the preconceived notions of the economists who have created them, and have been based on economic statistics rather than on a careful study of the factors that shape individual decision-making. As a result, theories of development have been built around economic aggregates—"labor" and "capital"—linked in simple ways. The true complexity of development and the crucial role of individuals have been overlooked.

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[17] Roger Vaughan, Robert Pollard, and Barbara Dyer, *Wealth of States*, Washington D.C., Council of State Policy and Planning Agencies, 1986, chapter 3, for a more detailed criticism of the export base model.

TRADITIONAL ECONOMIC DEVELOPMENT STRATEGIES

The bidding finally peaked with an unbeatable offer...including $30 million in faculty endowments at the University of Texas, $37 million in equipment and operating expenses, $20 million worth of office space, subsidized home mortgages for Microelectronics and Computer Corporation's employees, a petty cash fund of a half-million dollars for country club initiation fees and other services, and a Lear jet with two pilots available at all times.

Governor Bruce Babbitt, 1984

The man who offers a bribe gives away a little of his own importance; the bribe once accepted, he becomes the inferior, like a man who has paid for a woman.

Graham Greene, 1966

Until recently, development policymakers viewed their task as promoting investment in tangible capital—the construction of factories, the installation of new machines, and the construction of public works. They understood economic history as the unfolding story of money, mechanization, and infrastructure, in which labor played a passive role: either filling jobs created by capital investment or, by its availability, attracting capital investment.

Much state and local activity laid the foundations for economic growth. Investments in public infrastructure—the network of roads, water supply and treatment systems, public buildings, and air and water transportation—was vital for development. Unfortunately, the public commitment to the construction of new infrastructure was rarely matched by a commitment to maintaining and repairing those systems once built. The problem was that the political benefits enjoyed from the construction of new facilities did not attach to careful maintenance.

Programs specifically undertaken to promote development employed tools intended to subsidize private investment decisions. The *Urban Institute* compiled the following list of state development policies. Many of these tools have been used to recruit large manufacturing firms to

Financial Incentives	Nonfinancial Incentives
Grants	Business Consulting
Loans	Management Training
Interest Subsidies	Market Studies
Direct Subsidies	Site Selection and Preparation
Loan Guarantees	Streamlined Licensing
Industrial Revenue Bonds	Customized Job Training
General Revenue Bonds	Research and Development
Umbrella Bonds	Contract Procurement Assistance
Equity and Near-Equity Finance	Specialty Services
Tax Abatements and Exemptions	Business Incubators

Source:The Urban Institute, Directory of Incentives for Business Investment Decision, Washington D.C., 1983.

expand the local "export base." Over time, states and communities extended their use to retain jobs—either by subsidizing existing firms threatening to leave or large local employers that were failing.

These tools can be described as mercantilistic. In his introduction to Hernando de Soto's study of development of Lima, Peru, Mario Vargas Llosa offers a succinct definition of modern day mercantilism:[18]

> The term...defines a historic period, an economic school, and a moral attitude. Here "mercantilism" means a bureaucratized and law-ridden state that regards the redistribution of national wealth as more important than the production of wealth. And "redistribution," as used here, means the concession of monopolies or favored status to a small elite that depends on the state and on which the state itself is dependent.

Although no U.S. community suffers from the highly centralized economic controls that Lima labors under, the tendency toward mercantilism is always present in traditional state and local development strategies.

Subsidies to favored firms and industries may have worked effectively as the nation expanded its manufacturing capacity during the 1940s and 1950s. Companies were opening new plants in new communities as the interstate made them accessible and as air conditioning made them tolerable. The 1970s and 1980s, however, revealed serious weaknesses. State and local development policies concentrated on manufacturing—a shrinking share of national employment—and large firms—that were generating a shrinking share of new jobs.

Despite its modern policy armory, the battlefield tactics of state development practitioners were a slightly updated version of 17th century mercantilism. They attempted to amass jobs by promoting exports (by attracting manufacturing firms) and limiting imports (by providing in-state businesses with preferential treatment). Reflecting its historic antecedents, economist Richard McKenzie has labelled this approach to development "jobilism."[19]

These traditional policies were shaped by economists and elected leaders. While economists provided the empirical support through regional growth models that depended on the measurable, politicians built development strategies by pursuing the attributable. "Ninety percent of the political art," says economist Thomas Sowell, "lays in ostentatious giving and surreptitious taking."[20] By 1980, traditional strategies were supported more by political considerations than by an accurate metaphor of the real forces driving economic development.

In 1980, the traditional model of development was founded on a model that no longer fit the economic environment. It measured success inappropriately and it used the wrong means to pursue its goals.

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[18] Hernando de Soto, *The Other Path*, New York, Harper and Row, 1989, p. xvi.

[19] Richard McKenzie, *The Great American Job Machine*, Washington D.C., The Cato Institute, 1988.

[20] Thomas Sowell, *Markets and Minorities*, New York, Basic Books, 1981, p. 26.

JOBS: THE WRONG MEASURE OF DEVELOPMENT

Human labor is not an end, it is a means.

Frederic Bastiat, 1866

Traditional development strategies have attempted to generate jobs by stimulating exports through subsidizing local businesses that serve national markets—usually manufacturing firms—and by attracting export earning enterprises such as large manufacturing plants, large hotels, and supercolliders. They attempted to reduce imports by providing preferential treatment to local firms when bidding on state contracts.

But swapping jobs for mercantilist gold did not make the underlying metaphor more appropriate. Counting jobs as the measure of economic success fails to distinguish between the quality of employment opportunities and usually leads us to overlook the role that human capital plays in encouraging development. Recruiting low-skill, low-wage jobs—as Mississippi did—offered short term benefits, but often failed to build the state's capacity to produce in the longer term.

Development officials whose economic models employed jobs as the "dependent variable" overlooked many public activities that could promote development.

TARGETING INDUSTRIES: THE WRONG WAY TO CAPTURE JOBS

The economist can, of course, give us the facts. That is his job. He is a good cartographer, but a bad pilot.

Vincent Massey, 1924

Most state and local governments husband their small development budgets by aiming at firms or industries perceived to have the greatest local development potential and turn to forecasters to help them identify those targets. The two most frequent targets are growth industries and industries or firms whose output is sold outside the region or whose output is a substitute for goods imported into the region. These targets reflect important kernels of truth about economic development, but trying to find targets precise enough to shape state programs is an inappropriate use of forecasting models—the development process is too complex and analytic techniques too imprecise.

Development policy has focused on attracting *manufacturing* jobs because many growth theorists have argued that, unless a region can increase sales to customers out-of-state, it cannot create wealth. Enterprises that simply meet local demands for goods and services depend on the income generated by export industries. But if growth occurs through exports, then increases in opportunity world-wide can only be explained by intergalactic trade.[21]

New and more-productive enterprises—even those as prosaic as better dry-cleaners—increase the well-being of local residents, may provide starts for talented entrepreneurs (who may, in turn, help finance other new local businesses), and may serve as models of entrepreneurial effort that others will emulate. None of these factors enter into traditional models of development.

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[21] Roger J. Vaughan, "Economists and Economic Development," *Economic Development Quarterly*, May 1988.

Firms selling in world markets do create wealth and new opportunities. But so do firms that serve much more modest and local markets. Development is too complex to be reduced to mechanical models. It must be understood in the broader context of individual decision-making.

Most states attempt to target industries that appear to have good prospects for growth either because the state's resources are compatible with the industry's demands or because the industry has strong growth prospects. The South Carolina Legislature describes the typical targeting procedure:

> According to economic development specialists and practitioners, in deciding which industries to target, the [state] development agency must determine 1) the industries that are growing, 2) the growing industries' needs or location criteria, 3) the state's resources, and 4) the state's development goals. After this information is gathered, the development agency determines the growing industries whose location criteria most closely match the state's resources and development goals. The list of specific targeted industry types should be updated as economic conditions and the state's needs change.[22]

Tempting in theory, targeting cannot work in practice. Economic models cannot identify industries with any degree of precision: models and data are too crude; and matching industries with state resources is no indication of which industries will respond to state programs.[23] A cluster of target industries identified from economic statistics should not guide the deployment of state development resources. "The laws of probability," warned Edward Gibbon in 1794, "so true in general, so fallacious in particular."

After an exhaustive attempt to identify growth industries for New York City by the RAND Corporation, researchers found none of their models, when applied retrospectively, was able to perform better than random selection.[24] More recently, other researchers at the RAND Corporation found that there were some statistical indicators of sectors that were most likely to expand locally—including sectors with a smaller share of local employment than of national employment and sectors "enjoying unusual and sustained prominence in the local economy."[25] Their approach, however, works at a very high level of aggregation and does not identify industries that would be responsive to state and local development initiatives.

Even an accurate forecast of local growth industries would not predict how these industries would respond to public policies—a customized training program, a prepared site, tax abatements,

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[22] *A Review and Assessment of the State's Economic Development Activities*, Legislative Audit Council, State of South Carolina General Assembly, April 1985.

[23] If it were possible to identify future growth industries through econometric techniques, then institutional investors--controlling vast portfolios--would be the first to employ them. But no empirical technique has yet proved sufficiently reliable.

[24] "Target Growth Industries for New York City," unpublished report prepared for New York City, Office of Policy Evaluation and Research, New York City Rand Institute, July 1975.

[25] Anthony Pascal and Aaron Gurwitz, *Picking Winners: Industrial Strategies for Local Economic Development*, Santa Monica, CA, The Rand Corporation 1983, p.vi.

or low-interest rate loans.[26] There is no way of targeting a development strategy based on econometric analysis.

When they spend public funds to pursue a portfolio of "target industries," economic development specialists are overlooking the uncertainty that accompanies all economic activity. Economic data are too inaccurate and models too primitive to reduce opportunity creation to an econometric exercise.

THE ECLIPSE OF TRADITIONAL DEVELOPMENT POLICIES

> *Economists' advice is something like patent medicine—people know it is largely manufactured by quacks and that a good percentage of the time it won't work, but they continue to buy the brand whose flavor they like.*
>
> Barbara Bergmann, 1974

Over the past decade, models and metaphors of development have been changing. A growing number of state and local governments sensed that traditional development policies were not working: there were, by one estimate, three times as many development agencies as there were relocating or branching plants involving more than a few dozen employees. The incidence of poverty appeared to be rising even in areas where employment was growing. Unemployment rates were increasing secularly. Many communities suffered devastating plant closings. Wages and real incomes were declining.

But investing in people was not, initially, the most widely-debated alternative model of development. The front runner was "Industrial Policy." The metaphor borrowed by industrial policy advocates was that of collective decision-making.[27] Problems could be solved if leaders of industry and government negotiated jointly-financed investment projects: the creation of fifth generation computers, the applications of breakthroughs in bio-technology, the restructuring of basic industry, and other major initiatives to re-establish the United States as the world's industrial leader. The government would offer temporary protection from foreign competitors, cooperative funding of research, low cost capital, and other inducements. Industry, in turn, would increase its alarmingly low rate of investment, reduce lay-offs, and become more competitive. The Japanese Ministry of International Trade and Industry was offered as a model.[28]

In many ways, however, industrial policy was the apotheosis of traditional development strategies. It was highly-centralized; it focused on physical capital investments; and it emphasized

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[26] Factor intensity measured in U.S. Department of Commerce statistics do not indicate how easily the factors can be substituted and therefore how the industry might respond to a public subsidy. For example, an industry located where energy prices are relatively low might be identified as an intensive energy user but might easily accommodate high energy prices by changing its technology and cutting energy use and would benefit little from low-cost energy from the state.

[27] The BusinessWeek Team, *The Reindustrialization of America*, New York, BusinessWeek, 1981.

[28] For a statement of how these negotiated agreements would work, see Ira Magaziner and Robert Reich, *Minding America's Business*, New York, Harcourt, Brace Jovanovich, 1982.

highly visible projects. Charles Schultze described it as "a policy in search of a problem."[29] It failed because forces were drawing attention toward the importance of people.

The vigorous policy debate that culminated in the passage of the 1981 Economic Recovery Tax Act centered on the necessity of providing incentives for saving and investment, not on the importance of human capital.[30] The "Industrial Policy" debate proceeded with no serious discussion of human capital issues.[31] Investments in human capital were treated only briefly—usually stressing the need to retrain the employees of declining industries in order to allow the shifting of resources into growth areas.

Politically, actions that offer quick and visible benefits (such as new convention centers or bail-outs to ailing businesses)—even if those benefits are more apparent than real—will always be preferred to those that work over the longer term and more subtly—such as education. For the same reasons, the political process prefers centralized programs that can be controlled (or can appear to be controlled) by elected officials. Education is highly decentralized and the credit for successes rebounds to those in the classroom rather than to those voting to fund the programs. Education is also a complex process—after much research we still cannot point with confidence to learning processes and education governance structures that work best.[32] Politicians preferred the visibility offered by ribbon-cutting ceremonies at large-scale construction projects or the ease with which tax incentives could be offered to encourage business investment.[33] Education and training programs are more complex, less obvious, and rarely seemed to work well as traditional development policies.

But by the end of the 1970s the weaknesses of the traditional approach to economic development were becoming more apparent. The number of new manufacturing jobs was declining rapidly—squeezed by the introduction of labor saving technologies and the rapid increase in imports of consumer durables. There was growing evidence that state and local fiscal subsidies did not

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[29] Charles Schultz, Remarks at a Conference on Industrial Policy, Jackson Hole, Wyoming, August 1, 1983.

[30] See a list of those testifying before the U.S. House Committee on Ways and Means, January through May, 1981.

[31] Three of the most widely cited works from this debate contained no discussion of education or training. They were: The BusinessWeek Team, Op.Cit; Magaziner and Reich, Op.Cit; Barry Bluestone and Bennet Harrison, *The Deindustrialization of America*, New York, Basic Books, 1982. Neither did Chalmers Johnson, *The Industrial Policy Debate*, San Francisco, The Institute for Contemporary Studies, 1984.

[32] U.S. Department of Education, *What Works*, Washington D.C., 1986.

[33] For a review of these state development practices see Bruce Babbitt, *Grass Roots Industrial Policy, Issues in Science and Technology*, National Academy of Science, 1984, Roger Vaughan, Robert Pollard, and Barbara Dyer, Op.Cit., National Governors Association, *Economic Development*, Washington D.C., 1987, and Committee for Economic Development, *Leadership for Dynamic State Economies*, New York, CED, 1986.

play a strong role in determining industrial location decisions.[34] One survey found that most relocating or branching firms were unaware of subsidies before they made their decision. Those firms that did play the subsidy game had pushed the stakes up very high—over $50,000 a job in the case of the Toyota plant in Kentucky.[35] It did not take other firms long to realize that one firm's subsidy is—directly or indirectly—another firm's tax increase. The subsidized firm needed the same public services and facilities as other, tax-paying firms. In Illinois, local businesses protested strongly when Mitsubishi received tax abatements and low-interest loans not offered to long-established businesses.

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[34] Michael Keischnick, *Taxes and Growth*, Washington D.C., Council of State Policy and Planning Agencies, 1981.

[35] Richard Sims, *Economic and Fiscal Effects of the Toyota Auto Facility on the Kentucky Economy*, Presentation to the Appropriations and Revenue Committee of the Kentucky General Assembly, October 23, 1986.

MIXING METAPHORS: EDUCATION ENTERS DEVELOPMENT STRATEGIES

There is much anxiety about food, energy, space, and other physical properties of the earth. Such anxiety is not new...I reject it because a valid assessment must reckon the abilities of man to deal with changes in physical properties of the earth. Increases in the acquired abilities of people throughout the world and advances in useful knowledge hold the key to future economic productivity and to human well-being.

Nobel Laureate Economist, Theodore Schultz, 1960

During the 1980s, interest in promoting development by investing in people grew. Economists rediscovered human capital—theory that had been applied to third world countries since the mid-1960s in reaction to the failure of the earlier emphasis on buying equipment and building plants (much of which had rusted for want of skilled operators). There was mounting evidence that the U.S. and its states needed to absorb some of the lessons they had been teaching others.

During the 1970s, Silicon Valley and Route 128 provided a new metaphor for economic development—the engineer in the garage whose tinkering creates a billion dollar industry. Research discovered that new and small businesses created most new jobs. Industrial recruiters had been backing the wrong horses. And, during the 1980s, slowing workforce growth shifted the basic development question from: "how can we attract jobs for the local unemployed?" to: "how can we find qualified people to fill these jobs?"

None of these phenomena was new. Human capital theory—in one form or another—had been around for two hundred years. The nineteenth century had been peopled by vigorous and successful entrepreneurs. And labor scarcity had been a recurring problem until 1930. In the 1980s, these concerns coincided.

HUMAN CAPITAL: DEVELOPMENT NEEDS CRAFTSMEN AS WELL AS TOOLS

The future offers very little hope for those who expect that our new mechanical slaves will offer us a world in which we may rest from thinking. Help us they may, but at the cost of supreme demands on our honesty and our intelligence.

Norbert Wiener, 1964

If economic policymakers were preoccupied with physical capital, an influential minority of economists explored human capital as an asset that contributed to growth. There have, of course, been many strong supporters for education as an economic development tool for many years. In 1848, Horace Mann argued before the Massachusetts Board of Education that the "beneficent power of education...has the prerogative of creating new [wealth]."[36]

Senator Hoke Smith and Representative Dudley Hughes of Georgia—who introduced the first federal vocational education act in 1917—justified its rather meager appropriations on the grounds that it would make the nation more competitive with Europe and raise productivity as well

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[36] Cited in W. Norton Grubb, "Simple Faiths, Complex Facts: Vocational Education as an Economic Development Strategy," in Jurgen Schmandt and Robert Wilson, eds., *Growth Policy in an Age of High Technology*, forthcoming.

as diminish crime and keep youth down on the farm.[37] But vocational rhetoric did not fit into the models of developers. During the 1970s—60 years after the federal government began supporting vocational education, the most development-oriented branch of education—most states ignored their voc-ed systems when they created customized training programs to promote development.[38] Instead of creating real training programs, states chose to give money away in tax breaks to companies moving in as wage subsidies.

The importance of education was supporting what some elected officials had suspected for years. President Lyndon B. Johnson, a schoolteacher before he entered politics, also said, in 1964: "At the desk [where] I sit I have learned one great truth. The answer for all our national problems—the answer for all the problems of the world—comes to a single word. That word is 'education'."

The revival of the human capital school owes its force to the coincidence of several important trends:

First, some economists working in less developed countries realized that their distinguishing feature is the lack of human capital, not the absence of investment funds.

Second, economists consistently found that increases in education were responsible for at least half of the annual growth in real income.

Third, new technologies demanded a better-educated workforce.

Fourth, studies found that variations in income were explained in large part by differences in education.

Fifth, the declining achievements of American students—especially in comparison with students overseas—were documented in several influential reports.

By 1988, even *BusinessWeek* had recognized the importance of human capital. "The nation's ability to compete is threatened by our inadequate investment in our most important resource: people," their September 19 issue announced on the cover. "Put simply, too many workers lack the skills to perform more demanding jobs."

Less-Developed Countries Provide a Model of the Importance of Human Capital

For 25 years after World War II, developed countries tried to help less developed countries by financing large-scale projects. These were designed to create wealth either by reducing the need

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[37] See "Choosing Among the Goals For Vocational Education," Southern Growth Policies Board, December 1984.

[38] Of 45 programs, only 17 were set up within education bureaucracies. The rest were given to departments of economic development or in brand new agencies (see David Stevens, State Industry-Specific Training Programs: Design and Implementation Issues," Department of Economics, University of Missouri-Columbia, December 1987. North Carolina stands as a clear and important exception.

for imports or to generate export earnings—the same approach that was being used domestically.[39] The success of the "physical capital" approach in war-devastated Europe encouraged these specialists to overlook the lack of success in less developed countries that lacked the rich human capital stock accumulated in Europe.

In the early 1960s, important publications by Theodore Schultz and Gary Becker defined the concept of human capital and provided a formal structure for the earlier insights of Adam Smith. They also examined ways of measuring its contribution to growth and development.[40] Schultz was able to demonstrate to less-developed countries—pointing to the rusting machinery, increasing dependence on imported food, and their persistent poverty—that investments in skills were more important than machines: "It does not distract from the economic fundamentals of Adam Smith to point out that the wealth of nations would come to be predominantly the acquired abilities of the people—their education, experience, skills, and health."[41]

Those countries that have experienced the most rapid growth in income have been those that have increased their investments in education. For example, in 1970 40 percent of young South Koreans enrolled in school. Today, 85 percent enroll.[42]

Empirical Evidence Points to Education as the Driving Force for Income Growth

Economists' grail-like quest to explain the rate of growth of income has consistently found education and overall improvements in the workforce as the major determinants.[43] The quest grew in importance as the economy appeared to falter in the late 1970s, when the unemployment rate rose and the growth of productivity turned negative.

Several path-breaking studies have estimated the contribution of education. Denison concluded that increases in the average number of years of schooling were responsible for adding nearly one half a percent to productivity growth between 1929 and 1978, and that together with improvements in knowledge and increases in the size of the workforce, accounted for three quarters of economic growth over that period.[44] John Kendrick demonstrated that the rate of return on human capital investments was of comparable magnitude to the rate of return on non-human

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[39] For a recent summary of "the big push" school, see Gerald M. Meier, *Emerging from Poverty: The Economics That Really Matters*, Oxford, Oxford University Press, 1986.

[40] T.W. Schultz, "Investment in Human Capital," *American Economic Review*, March 1961, and Gary S. Becker, *Human Capital*, Chicago, University of Chicago Press, 1964.

[41] T.W. Schultz, *Investing in People*, Berkeley, University of California Press, 1981, p.140.

[42] Office of Technology Assessment, Op.Cit.

[43] Summarized in Martin Neil Baily and Alok K. Chakrabarti, *Innovation and the Productivity Crisis*, Washington D.C., The Brookings Institution, 1988.

[44] Edward Denison, *Sources of Income Growth in the United States: 1929-1982*, Washington D.C., The Brookings Institution, 1985.

capital.[45] Work by Jacob Mincer demonstrated that human capital need not be an unmeasured residual.[46] Four-fifths of U.S. income is from earnings and only one-fifth from property—the highest earnings share in the world.

Until this decade, much research pointed to the fact that the nation was overinvesting in education. The shrinking premium earned by those with post-secondary education prompted one economist to title an influential 1976 study *The Overeducated American.*[47] Returns to education had fallen during the 1970s with the surge of educated baby boomers entering the workforce.[48]

In the 1980s, the returns to education have increased sharply and skills shortages have become much more widespread.[49] The earnings of college graduates (during their first five years in the labor market) relative to similarly-experienced high school graduates had fallen from 150 percent in 1965 to only 130 percent in 1979. But those relative earnings leapt to 180 percent by 1986—a startling symptom of the sudden emergence of the growing difficulty of meeting employers' demands for skills. Employers who had been lobbying for lower state taxes during the 1970s began campaigning in support of education reform packages—most of which involved tax increases.[50]

Most people need training. In 1986, over one-half of all employees reported receiving some form of post-secondary occupational training—about half of these at their own initiative and about half from their employers.[51] Two out of five men and one out of three women report that they needed occupational training (formal or on-the-job) to qualify for their present jobs:[52] 26.7 percent of men and 28.2 women reported training to upgrade skills on their current jobs.

The Hudson Institute estimates that three-quarters of those entering the workforce between 1985 and 2000 will be qualified only for what the Department of Labor classifies as Level 1 and Level 2 jobs—those requiring limited verbal and writing skills. But they will be competing for

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[45] John Kendrick, *The Formation of Stocks of Total Capital*, New York, National Bureau of Economic Research, 1976.

[46] Jacob Mincer, "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy*, August, 1958, and *Schooling, Experience and Earnings*, New York, Columbia University Press, 1974.

[47] Richard Freeman, *The Overeducated American*, Academic Press, New York, 1976.

[48] Murphy and Welch, "Wage Differentials," Op.Cit.

[49] The post-1979 changes are documented by Kevin Murphy and Finis Welch, *The Structure of Wages*, Report prepared for the U.S. Department of Health and Human Services, University of California, Los Angeles, September 1988.

[50] In 1986, in a CED report, Franklin Lindsay, Chairman of Vectron, actually urged states to form compacts renouncing the competitive use of tax incentives.

[51] Lillard and Tan, Op.Cit., Table 2.3.

[52] Hong Tan, "Private Sector Training in the United States: Who Gets it and Why," paper prepared for conference on employer-sponsored training, Institute on Education and the Economy, Washington D.C., December 1988.

only 40 percent of the new jobs. Only 25 percent of the new entrants will be qualified for three-quarters of the new jobs. It is not surprising that New York Telephone Company had to test 60,000 applicants last year to fill 3,000 vacancies.[53]

The shortage of educated and skilled people is particularly severe in science and engineering. Only about 4 percent of BAs are in the sciences or engineering, and the National Science Foundation estimates the nation may face a shortage of 27,000 science Ph.Ds by the end of the century.

New Technologies Demand Better-Skilled Employees

The exploitation of new technologies as well as their development depends upon the ingenuity of those engaged in the production of goods and services. The success of enterprises does not depend upon the technical and managerial skills of the employer but upon the flexibility and aptitude of both employer and employees. And the capacity of people to escape from the accidents of birth and experience that have left them poor depends upon the skills they are able to offer employers and their ability to market those skills.

At the same time, technology is increasing the basic skills required for careers that advance beyond entry-level work. The Hudson Institute estimates that more than half the new jobs that will be created by the end of the century will require education beyond high school and one-third will require a college degree.[54]

Data and Experience Reveal that Long-Term Poverty is Largely the Result of Poor Education

Adam Smith believed that "the differences between the most dissimilar characters, between a philosopher and a street porter, for example, seems to arise not so much from nature as from habit, custom, and education."[55] In the 1970s, a growing body of research offered at least superficial support.

While many people are poor only temporarily—while they deal with the consequences of problems such as divorce, desertion, illness, or job loss—the minority who are poor for a long time are those who lack the basic skills that are needed to find and keep jobs. In 1980, for example, a high school graduate had a 61 percent better chance of being employed than a high school

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[53] *BusinessWeek*, September 19, 1988, p.105.

[54] Jobs for the Future, *States and Economic Development: Expanding Opportunities for Employment and Self-Sufficiency*, Prepared for COSCAA National Conference, Cleveland, June 1988.

[55] *Wealth of Nations*, Op.Cit, chapter II, p.17.

dropout.[56] Only one out of ten poor young people graduating from high school in 1970 were poor ten years later.[57]

Racial differences in income and employment status disappeared when data were adjusted for differences in educational attainment and achievement.[58] But problems of older uneducated people have worsened as their wages have declined relative to those of more skilled people. The economic recovery of the mid-1980s has, disproportionately, expanded opportunities for those who were already well-educated and affluent. In 1986, the Census Bureau sampled 60,000 homes and found that the average income of the richest one fifth had increased from $70,260 to $76,300 (in constant dollars) during the preceding three years while the average income of the poorest one-fifth had fallen from $8,761 to $8,033.[59]

Declining Productivity Growth in the U.S. Coincided with Deteriorating Educational Achievement

The scathing study, *A Nation at Risk* in 1983, more than any other document, strengthened the case made by the human capital school to economic policymakers. Its quotable prose, simple message, and telling use of statistics offered a plausible explanation for the deep economic recession that had endured since 1979, and for the nation's poor economic performance relative to its trading partners.

Most alarming, international comparisons have documented the declining achievements of U.S. students relative to those in other countries. The 1988 International Association for the Evaluation of Educational Achievement **Science Achievement in Seventeen Countries** reports, that, for fourteen year olds:

> The U.S.A. was third to last out of seventeen countries with Hong Kong and the Philippines being in the sixteenth and seventeenth places. Thailand had a score equal to that of the U.S.A...The IEA conducted its last survey in 1970...The United States has dropped from seventh out of seventeen to third from the bottom.

ENTREPRENEURSHIP: INVESTMENTS NEED INVESTORS

> *The Entrepreneurial Spirit, the potential for discovery, is always waiting to be released. Human ingenuity is irrepressible and perennial.*
>
> Israel Kirzner, 1974

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[56] Gordon Berlin, "Youth Unemployment: Will the Past be Prologue," paper presented at the National Neighborhood Coalition, 1985,

[57] Charles Murray and Deborah Laren, "According to Age: Longitudinal Profiles of AFDC Recipients and the Poor by Age Group," Working Seminar on the Family and American Welfare Policy, American Enterprise Institute, September 1986.

[58] James Smith and Finis Welch, *Closing the Gap: Forty Years of Economic Progress for Blacks*, The RAND Corporation, Santa Monica, February 1986.

[59] *New York Times*, May 1, 1988, cited in Jobs for the Future, Op.Cit.

The role of skills in development received increasing attention from a quite separate direction toward the end of the 1970s. The entrepreneur was discovered first by policymakers and later by economists after languishing in obscure reaches of the Austrian school of economics since the 1920s.[60]

The entrepreneur became fashionable initially because of the resounding success of Silicon Valley and Route 128 during the 1970s and because of the empirical finding that small and new businesses create most new jobs. While the human capital school had focused on peoples' abilities in performing tasks for someone else, the entrepreneurial school was concerned with peoples' skills and motivation in creating their own opportunities.[61]

It requires imagination to try something new, a willingness to take risks, judgment to learn from experience, and information about opportunities and ways to pursue them. Some of these predispositions may be innate, but there is no doubt that these aptitudes may be developed and sharpened through formal education.

Economic development, or opportunity creation, is decentralized. It is not confined to the corporate boardroom or the legislative chamber. And its benefits can, but often do not, extend to all parts of society. While traditional economic growth models focus on the decisions of a few people—corporate executives deciding where to locate a new plant or state officials determining whether to proceed with a major construction project—it largely overlooks the countless smaller decisions that create most new opportunities. Large decisions are visible but infrequent.[62] In most communities, the one in four high school students who fail to graduate will destroy more opportunities than can be replaced by any new branch plant.[63] And without a skilled workforce, the plant itself may be unable to compete.

New Businesses: Small Is Beautiful, or At Least Numerous

In 1978, MIT professor David Birch estimated that, nationwide, two-thirds of the new jobs created between 1969 and 1976 were caused by the birth of new businesses and expansion of

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[60] Schumpeter had provided a formal structure for an entrepreneurial view of development in *Theory of Economic Development*, Chicago, University of Chicago Press, 1926. The Austrian approach to economic development is described in Alexander Shand, *The Capitalist Alternative*, New York, New York University Press, 1984.

[61] For a summary of entrepreneurial research see Peter Drucker, *Innovation and Entrepreneurship*, New York, Harper and Row, 1985, Calvin Kent, *The Environment for Entrepreneurship*, Lexington, Lexington Books, 1984, Albert Shapero, "The Role of Entrepreneurship in Economic Development," in Robert Friedman and William Schweke, eds., *Expanding the Opportunity to Produce*, Washington D.C., Corporation for Enterprise Development, 1981. Debate over the relative importance of nature and nurture in creating entrepreneurs remains heated. One recent study found that the most significant factor in explaining whether someone is self-employed is not income or education but whether or not his father was self-employed.

[62] For example, economist Roger Schmenner estimated that there were only about 400 major plant branchings or relocations in 1980, see *Making Business Location Decisions*, Englewood Cliffs, NJ, Prentice Hall, 1982.

[63] Each drop-out will earn, on average, only two thirds as much as someone who completes high school. The act of dropping out, therefore, "destroys" one-third of a job.

businesses less than five years old (net of the jobs lost through the disappearance of those new ventures that do not survive)[64] and businesses with fewer than 20 employees had created 80 percent of the net new jobs created nationwide. No research paper—published or unpublished—has ever received as much attention by the development community as Birch's findings.[65] Many policymakers support his thesis and cite his work even though there have been serious challenges to the validity of his data. Development policymakers quickly sought ways to find and nurture entrepreneurs—tasks which have not proved easy (see following section).[66]

The Brookings Institution, using the same type of data as David Birch—Dun and Bradstreet data on business incorporations—concluded that small business was responsible for less than half of new jobs, but still found that new incorporations included over half of the new jobs between 1978 and 1980.[67] Although studies use different data sources and different time periods, and cannot be compared directly, all demonstrate the primary role in the creation of new opportunities to the birth of new businesses—regardless of prevailing economic conditions, region, or time period. Recently, several state profiles of entrepreneurship have been conducted based on more reliable data sources—state unemployment insurance files.

In **North Dakota**, 20 percent of all jobs in the state today are in businesses created since 1980—the highest percentage in the six states studied by the Council of State Policy and Planning Agencies.[68] Total employment had grown by only 11 percent during the period.[69]

In 1988, 14,792 (14 percent) of the people working in **Michigan's Upper Peninsula** were employed in 2,215 businesses created since 1982.[70] Total job growth during this period was only 10,900. New businesses, therefore accounted for about 140 percent of the new jobs.

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[64] David Birch, *Job Generation in America*, New York, Basic Books, 1987.

[65] The influence of Birch's findings on state development policy are traced by David Osborne,in *Laboratories of Democracy*, Boston, Harvard Business School Press, 1988, chapter 1.

[66] There were many different studies, most provoked by David Birch's seminal--but unreliable--study, The Job Generation Process, MIT Program on Neighborhood and Regional Change, Cambridge, MA, 1978.

[67] Catherine Armington and Marjorie Odle, "Sources of Employment Growth: 1978-80," Paper prepared for the Second Annual Small Business Conference, Bentley College, MA, 1982.

[68] Terry F. Buss and Mark G. Popovich, *Growth from Within*, Washington D.C., Council of State Policy and Planning Agencies, November 1988.

[69] North Dakota had been ranked 47th in the rate of new business incorporations--which illustrates the unreliability of data presented by David Birch, 1987, Op.Cit. which is derived from Dun and Bradstreet data on business incorporations.

[70] The data discussed in this section are based on an analysis of Unemployment Insurance data compiled by the Michigan Employment Security Commission, reported in Terry F. Buss, Peter Gemmel, and Roger Vaughan, *New Enterprise Development in Michigan's Upper Peninsula*, Northern Michigan University, 1989. New businesses are identified as those employing at least one worker covered by U.I. given new account numbers. In some instances, these are the purchase of an existing business by a new entrepreneur.

In **Maine**, a state that has experienced rapid growth over the past five years, 14 percent of the all jobs at the end of 1987 were in businesses that had been created since 1981.[71]

In **Iowa**, a state that had experienced severe economic problems over the past five years, 13 percent of existing jobs were in firms that did not exist five years ago.[72]

Jobs created by new firms accounted for more than half of the new jobs created in **Minnesota** between 1978 and 1986.[73]

Each year, about 600,000 new businesses are set up and nearly as many people become self employed.[74] Total employment, by comparison, has grown by about 2 million jobs each year.

Between 1975 and 1985, the share of working women who were self-employed increased from 3.5 percent to 5 percent, the share of self-employed men rose from 11 percent to 12 percent.[75]

These data depict a rapidly changing environment in which the individual seeking opportunities and willing to takes risks plays an increasingly important role in shaping economic growth. Most entrepreneurs, studies have found, are long-term local residents. They are very similar in their background, education, age, and experiences, as the rest of us with one important exception: they are twice as likely to have a father who was self-employed.[76]

Overall, however, those starting businesses tend to be better educated than overall populations.

RUNNING OUT OF WORKERS

Since 1930, a principle concern of economic policy has been the achievement or maintenance of full employment. The depression, the rapid mechanization of agriculture, the automation of manufacturing, and employment shifts from the Frost Belt to the Sunbelt and from the Central City to the Suburb created pockets of unemployment. Jobs was the most potent political cry. Today, that model no longer applies. The rapid decline in the rate of growth of the workforce means that development policy, in the future, must be concerned with finding qualified workers to fit jobs, not the other way round. Unskilled workers will continue to suffer a dearth of

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[71] Mark Popovich and Terry F. Buss, *Rural Enterprise Development: A Maine Case Study*, Washington D.C., Council of State Policy and Planning Agencies, forthcoming.

[72] Ibid.

[73] Paul Reynolds and Brenda Miller, *1987 Minnesota New Firms Study: An Exploration of New Firms and their Economic Contribution*, Center for Urban and Regional Affairs, University of Minnesota, 1988.

[74] Birch, Op.Cit.

[75] *Economist*, January 21, 1989, p.68.

[76] Unpublished research by Richard Bingham, Department of Economics, Cleveland State University.

(Percent Distribution)

Characteristic	Maine	North Dakota	Upper Peninsula
0-11 Years Schooling	8	13	11
High School Graduate	38	32	33
13+ Years Schooling	54	55	56
Male	66	63	69
Female	33	37	32
Age less than 30	11	16	10
Age 30-39	41	41	44
Age 40-49	29	24	31
Age 50+	19	19	16
Average Age	41	40	40
Had previously Started another business	38	27	34

Source: Terry F. Buss, Peter Gemmel, and Roger Vaughan, *New Enterprise Development in Michigan's Upper Peninsula*, Norther Michigan University, 1989.

well-paid jobs, but educated and skilled workers will operate in a sellers' market except during economic recessions.

At the same time that employers will need better-educated and trained workers, they will have fewer new employees to choose from. For decades economic development agencies have struggled to find jobs for their local workforces. Increasingly, they are having to find workers for the growing number of unfilled job slots.

Traditionally, we have met the growing demands for human capital by replacing retiring generations of workers with new generations that are larger and better trained. We can no longer do this. The American workforce is growing more slowly and the rate continues to fall. In 1970, the workforce—the number of people working or looking for work—was growing at about 2.5 percent annually, and nearly half the new entrants were white men. About two-thirds of the new workers were graduates from high school or college, about one sixth were women entering or re-entering the workforce, and about one sixth were immigrants. Today the workforce is growing by less than one percent annually.

Only 10 percent of the growth of the workforce until the year 2000 will be white men:[77] 34 percent of net additions will be white women. Black and hispanic workers will grow from 17.8 percent of the workforce to 23 percent. Immigrants—who make up 7 percent of the nation's work force today—will increase by one-quarter.

[77] The Hudson Institute, *Workforce 2000*, Indianapolis, IN, 1988.

The number of 16-19-year-olds in the workforce is declining absolutely and the share of the workforce aged 20-34 is falling. In the future, therefore, a growing share of the new skills needs in industry will have to be met by retraining existing workers.[78]

CONCLUSION

The growing realization that the economic environment was changing in ways not anticipated by economists and our economic models challenged not only our economic policies but the models or metaphors on which they were based.

Silicon Valley and the proliferating number of new businesses are all entrepreneurial actions—the attempt to find more effective use of resources by developing better products, better ways of doing things, and penetrating new markets. Entrepreneurship, of course, also embraces innovative behavior by existing companies and individual actions intended to improve economic prospects.

Economic development, according to Austrian economists, is the cumulative result of millions of investment decisions in which everyone plays a part—rich and poor, black and white, men and women. The decisions made by the displaced steelworker considering setting up an auto-body shop, the bank manager weighing a loan application, the college freshman selecting a major, the local council assessing the value of building a new park, and the state legislator voting on the state budget will create or destroy economic opportunities.

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[78] Mincer, Op.Cit.

EDUCATION AS DEVELOPMENT STRATEGY

A little reflection will show that the rate of capital formation to which economists give so much attention is a secondary factor...The basic factor in an economy's development must be the rate of 'brain formation'—the rate at which a country produces people with imagination and vision, education, theoretical and analytic skills.

Peter Drucker, 1977

Throughout the 1980s, states have been operating two parallel economic development strategies: one emphasizing business incentives; the other focusing on education and entrepreneurship. A 1987 survey by the *National Conference of State Legislatures* counted the number of states acting on different types of development policy:

	Adopted 1981-87	Adopted 1988	Expected 1989
Traditional Development Policies			
Procurement Assistance	15	7	3
Instate Preference laws	19	5	2
Industrial Revenue Bonds	38	6	3
Tax Incentives for Recruitment	32	4	6
Direct Loan Programs	44	12	5
Interest subsidies	15	6	4
Creating Foreign Trade Office	32	12	7
Export Finance Assistance	15	9	12
Trade Research/Counselling	16	2	*
Entrepreneurship Assistance			
Business Incubators	20	11	8
Advanced Technology Centers	27	13	12
Research and Development	30	13	12
Managerial/Technical Assistance	28	7	6
Equity/Venture Capital	26	16	11
Education and Training			
Job Training/Retraining	35	11	*
Education Reform	26	9	*

Source:National Conference of State Legislatures, **1988 State Economic Survey Results**, Denver, CO, 1988.
* Question not asked in 1988.

A comparison of state spending would reveal a 30:1 ratio in favor of education. Education—from kindergarten to graduate school—absorbs about 60 percent of state spending (although most is passed through school districts and local governments). The budgets of

departments of economic development rarely exceed 2 percent of state spending, excluding tax expenditures.[79]

Unfortunately, few of these initiatives have been evaluated—and most influence economic development only indirectly and after a long lag, so that evaluations would be unable to detect any effects on overall economic well-being. Education initiatives linked to three aspects of economic development are reviewed in the following sections.

> *Increasing basic skills of new workers* by improving the quality of K-12 schooling by setting higher standards for teachers and students, reforming curricula, and other education reforms.
>
> *Promoting entrepreneurship* by making high school education more practical, helping people to start their own businesses, expanding university research, encouraging the commercializing of university-developed technology, and creating incubators for new businesses.
>
> *Remedying educational deficiencies* of the economically disadvantaged to reduce dependence and expand the shrinking labor supply.

Human capital theorists, and a growing number of policymakers, stress population quality rather than simply education. Health and well-being are important determinants of people's productivity. Reflecting this, a growing number of states are recognizing that investments in pre-natal care today will shape the productivity of the workforce in a few years. Arizona, West Virginia, Mississippi, and some other states have created childrens' budgets, stressing that care for people during their early years may be the most influential actions that states can take. In 1987, The Committee for Economic Development published *Children in Need*, arguing the economic as well as the humanitarian importance of investing in children. The discussion in this chapter, however, is limited to education issues.

EDUCATION TO PROMOTE PRODUCTIVITY

> *It is no exaggeration to say that the struggle in which we are engaged may well be won or lost in the classroom.*
>
> James Blanchard, 1984
> Governor of Michigan

The states that have followed different initiatives to improve the overall quality of education are summarized in the table on the following page. This only indicates policies pursued by states; it does not indicate which state systems provide the best learning environment nor which state

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[79] Marianne Clarke, *Revitalizing State Economies*, Washington D.C., National Governors Association, 1986. We have no measure of tax expenditures because, with the exception of California, states do not systematically estimate tax expenditures--taxes *not* collected because of special provisions in the tax code.

economies are strongest. The movement to improve school quality is far from universal, and encounters fierce opposition.[80]

It is easy to treat human capital as analogous to physical capital—an invisible tool the worker carries with him that allows him to be more productive than his colleagues who are not so armed. But this view is too narrow. The central contribution of education is not through the creation of a pliant and dexterous workforce nor through supporting the scientific discoveries of the gifted few.

The central contribution is to make people better decision-makers—better able to create successful new ventures, to improve the productivity of the enterprise of which they are part, or to invest effectively in themselves. The high-school student weighing dropping out, the bank loan officer evaluating an application for credit from a new business, the displaced worker trying to start an auto repair shop, the university researcher experimenting with applications for a new invention, the drug company test-marketing a new product, or public agency employee developing plans for a new recreation area are all engaged in creating opportunities.

People who lack confidence or education can be skilled decision-makers, but are less likely to be than those who are better educated. Lack of education—the result of poor schools, failure to complete formal education, and failure to learn while at school—disqualifies people from jobs and prevents them from deciding what they really want to do.

What matters is the skill with which all investment decisions are made. Investment decisions are shaped by uncountable and unmeasurable factors—from the genetic characteristics of the decision-maker and the weather at the time of the decision to projections of potential costs and benefits. They are also shaped by more measurable factors—the education of the decision-makers, their experience, and the advice of family and friends. To contribute to economic development, therefore, the most important contribution of education may be to improve people's problem-solving and decision-making skills.

Improving education quality has focused on reducing state regulations on education, expanding individual choice, raising teacher competency standards, increasing school budgets, measuring scholastic achievement, and increasing graduation requirements.

To Invest Effectively in Education, People Need Information about Their Options

> *It has been said that figures rule the world; maybe. I am quite sure that it is figures which show us whether it is being ruled well or badly.*
>
> Johann Wolfgang Goethe, 1830

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[80] Secretary of Education William Bennett cited several states as examples of opposition to change:

> The Texas legislature eliminated the subject-knowledge section of its teacher competency exams. Alabama's legislature...abandoned that state's teacher career ladder. The Missouri legislature is considering a bill that would bar release to the public of student achievement scores. A panel of superintendents and principals appointed by the governor of South Dakota recently urged regulations governing school accreditation be weakened and that South Dakota's new, tougher high school graduation requirements be eliminated (*American Education: Making it Work*, Washington D.C., U.S. Department of Education, 1988).

State Policies to Improve Education Quality: 1988

	Teachers' Raises[a]	H.S. Graduation Requirements[b]	Computer Literacy	Compensatory Education[c]	Teacher Mentors[d]	Teacher Incentives[e]
Alabama	-1.9					*
Alaska	1.4					
Arizona	8.5			*		
Arkansas	2.3	*	*	*	*	*
California	6.9			*		*
Colorado	5.8					
Connecticut	11.0	*		*		
Delaware	11.5			*		
Florida	7.1	*		*	*	*
Georgia	6.9			*	*	
Hawaii	0.2			*		
Idaho	2.4					
Illinois	4.1					
Indiana	3.9	*		*	*	*
Iowa	3.7					
Kansas	3.5					
Kentucky	7.3	*		*	*	
Louisiana	-2.0	*	*			
Maine	8.6		*		*	*
Maryland	8.7	*		*		
Massachusetts	6.8			*		*
Michigan	7.2	*		*		
Minnesota	3.6			*		
Mississippi	5.3					
Missouri	6.8			*		*
Montana	7.6					
Nebraska	4.6					
Nevada	5.3					
New Hampshire	7.9		*			
New Jersey	2.6	*		*		*
New Mexico	6.4	*	*			
New York	5.0			*		*
North Carolina	5.8			*	*	
North Dakota	5.8					
Ohio	7.1			*		
Oklahoma	0.4				*	
Oregon	4.0					
Pennsylvania	5.5	*		*	*	*
Rhode Island	5.5			*		
South Carolina	7.5	*	*	*	*	*
South Dakota	7.5		*			
Tennessee	3.7		*	*		*
Texas	6.9	*		*		*
Utah	3.6		*	*		*
Vermont	13.3	*				
Virginia	8.9			*	*	
Washington	4.0			*		*
West Virginia	4.0			*		*
Wisconsin	5.6		*	*		
Wyoming	2.8					

Source: Corporation for Enterprise Development, 1988 Report card of the States, Washington D.C., 1988.
a Increases in teacher salaries 1986-87.
b States with high school math and science graduation requirements.
c States with state-funded compensatory education programs.
d States with teacher mentor internship programs.
e States with statewide incentives for recruiting and retaining teachers.

Educational changes will only achieve their basic purpose if there is information about how well programs and institutions are performing. Teachers and administrators need this information to know how well their programs are working, and parents and students need it to select where to enroll. People cannot make good decisions if they know little of the choices before them and are unable to find where relevant data may be available.[81] For example, displaced workers wanting to acquire a new skill may be unable to find out what education or training programs they qualify for, how to pay for these programs, or about the prospects of getting jobs if they graduate. They do not lack decision-making skills but lack basic information. People buying air conditioners are often given more details about their investments—on energy consumption and cooling capacity—than people considering much larger and longer-term investments in education. As a result, few displaced workers, poor people, and others who may not have access to well-developed informal information networks enroll in training programs and few of those that do are able to use their new skills to find work.[82]

Gathering information is costly—displaced workers could not afford to find out the pre-requisites, costs, and quality of training programs. Businesses perform this service when they can charge for it. Magazines carry information about job openings, consumer reports evaluate products, and consulting firms offer business advice. The state, by the nature of its duties, creates and stores much data which could help people with decisions.

Several states have developed information systems to improve labor market decisions. Kansas, for example, publishes placement rates and earnings of all graduates of post-secondary education programs.[83]

New Hampshire's Department of Postsecondary Vocational-Technical Education produces an annual report that shows, for every occupation in each institution, employment experience, continuing education, salaries and unemployed, and, for each institution, percent employed in major field. The report also lists employers who hire voc-ed graduates. The State terminates programs if enrollment is less than 80 percent capacity for two consecutive years or if less than 45 percent of freshman graduate.

Education Must Offer Basic and Applied Skills

In response to complaints from employers, several states and school districts are increasing the "applied content" in high school curricula: to provide high school students with greater familiarity with technology and to provide students with a concrete context for learning science, mathematics and other disciplines. In 1987, the International Education Association counted 40 states with some kind of technology education courses—many revitalized versions of industrial arts courses.[84]

New York passed sweeping 1984 vocational education reforms that replace all industrial arts terminology with technological language, embedded keyboarding into elementary language arts, and

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[81] Dr. Samuel Johnson said, in 1775: "Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it."

[82] Only a small fraction of people on welfare or displaced from their jobs enroll in formal education or training programs (Robert Friedman, *Safety Net as Ladder*, Washington D.C., Council of State Policy and Planning Agencies, 1988).

[83] Roger J. Vaughan,"Letting the Market Grade Colleges," *Wall Street Journal*, April 18, 1986.

[84] "Reading, 'Riting, 'Rithmetic, and Now Tech Ed," *BusinessWeek*, October 19, 1987, p. 114.

established tests for computer literacy at third and sixth grade. In high school, it establishes core courses in communications, production, transportation, electronics, energy, and drawing.[85] These changes have been followed by several other states.

None of these initiatives will influence the overall economy for many years. "We must be prepared to pay the price of time, argues Governor William Clinton of Arkansas. "The process of reforming our education system, retraining our work force, and restructuring our economic base cannot occur overnight. We will need a full decade of dedication to reap the full benefits of our efforts."[86]

EDUCATION TO PROMOTE ENTREPRENEURSHIP

> *The key to sustained economic progress is the development of new business enterprise...the state cannot itself create this entrepreneurial spirit but it can help create the conditions that allow it to flourish.*
>
> Hugh Carey, 1981
> Governor of New York

The discovery of the entrepreneur has led to a dramatic change in the development policies of many states. Programs to provide venture capital—usually through privately managed investment companies—have been initiated in 26 states, hundreds of publicly-funded business incubators have been created. Education programs—from high school to graduate school—have also been widely used to promote entrepreneurship.

In the high school, the teaching of economics is being changed to emphasize the understanding the real economic environment rather than how to interpret abstract graphs.

In post-secondary institutions, curricula are being extended to teach practical business skills in addition to more traditional occupational education.

In universities, the commercialization of research and development activities has been encouraged through additional research funding, the construction and funding of research centers, building of business incubators, and technology transfer programs.

Entrepreneurship in High School

> *The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to learn how to avoid being deceived by economists.*
>
> Joan Robinson, 1955

Economic development can be encouraged by making people more willing to take risks and making them better at weighing the advantages of different ways of creating opportunity. Participating in formal education programs—from K-12 to graduate school—can make people more effective problem-solvers and decision-makers.

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[85] James E. Good, "New York State Curriculum Plans," *The Technology Teacher*, February 1986.

[86] Cited in David Osborne, *Laboratories of Democracy*, Boston, MA, Harvard Business School Press, 1988, p.107.

First, education must encourage experimentation and risk taking. To do this, the learning process itself, and the whole education system, must experiment and take risks. The dual system of college bound and "shop" students in high school must break down to offer a wider array of choices based on the final success of students in the workplace.

Second, education must train people to think and to make decisions, not simply to memorize facts. Decision-making means applying judgment to a set of scenarios associated with alternative actions. It is a skill that we acquire more rapidly from our experience, the better educated we are.

Third, education must prepare people for the real world, not a theoretical world of textbooks. The material used in most schools, for example, to teach economics and social studies is of little use in decision-making. For example, "Enterprise High" in Michigan teaches students

State	Education-Related Initiatives to Promote Entrepreneurship				
	R & D Grants	R & D Centers	SBACs[a]	Incu-bators	Technology transfer
Alabama	*		**		*
Alaska					
Arizona		*			
Arkansas	*	*	*	*	*
California	*	*			
Colorado	*	*	*	*	*
Connecticut	*	*	*		
Delaware			*		
Florida	*	*	*		
Georgia		*	*	*	
Hawaii		*		*	*
Idaho			*		
Illinois			*	*	*
Indiana	*	*	*	*	*
Iowa	*	*	*	*	*
Kansas	*	*	*	*	*
Kentucky		*	*		
Louisiana			*	*	
Maine	*		*		
Maryland	*		*		*
Massachusetts	*	*	*	*	*
Michigan	*	*	*	*	*
Minnesota	*	*	*		*
Mississippi		*	*	*	*
Missouri	*	*	*	*	*
Montana	*		*	*	*
Nebraska	*	*	*	*	
Nevada				*	
New Hampshire			*		
New Jersey	*	*	*	*	*
New Mexico	*	*		*	*
New York	*	*	*	*	
North Carolina	*	*	*	*	*
North Dakota			*		*
Ohio	*	*	*	*	*
Oklahoma	*		*		*
Oregon	*	*	*	*	*
Pennsylvania	*	*	*	*	*
Rhode Island	*		*		
South Carolina	*	*	*	*	
South Dakota		*	*	*	
Tennessee		*			
Texas		*	*		*
Utah		*	*		*
Vermont			*	*	*
Virginia	*	*	*	*	
Washington		*	*	*	
West Virginia			*		
Wisconsin	*	*	*		*
Wyoming	*		*		

Source: Corporation for Enterprise Development, 1988 Report card of the States, Washington D.C., 1988, from various sources.
* Small Business Assistance Centers are funded from the Small Business Administration and usually located in Universities.

who have dropped out of high-school by exploring entrepreneurial ventures.[87] Although few students ever create their own businesses, many graduate into full-time jobs. In Rabun Gap, Georgia, the Foxfire Fund, Inc. has set up enterprises in the local high school producing books, records, tapes, and furniture. Munising High School in Michigan's Upper Peninsula has started a business making wooden pallets to give students real business experience as part of a course in practical business economics.[88] The purpose of entrepreneurial education is to alert students to entrepreneurship as a career possibility—to break the conventional view that a job is created by large businesses.

In Brooks County, Georgia, a poor, predominantly-black community, high school students built and operate a day care facility so that poor mothers can work. The state has made this school-based enterprise the only secondary school in Georgia that graduates students certified as day-care workers. This school-based enterprise has reduced drop-out rates.[89]

Post-Secondary Education Programs Are Training Potential Entrepreneurs

A growing number of post-secondary institutions are offering courses in entrepreneurship and growing numbers of students are enrolling. Some of these provide general background—financing, marketing, management, production, etc. Others provide specific coaching to potential entrepreneurs. Of 750 students in a recent class at the Harvard Business School, 570 elected to take the school's course on entrepreneurship.

In 1970, only a handful of business schools offered courses on entrepreneurship. By 1985, ***The Wall Street Journal*** counted 240.[90] At least four schools—Pennsylvania (Wharton Entrepreneurial Center), Babson, Baylor, and the University of Southern California—allow students to major in entrepreneurship. Demand, in many schools, outstrips supply.

There are many anecdotes of graduating students creating successful businesses, but few reliable data. Wichita State University surveyed 1,800 of the 2000 graduates of its Center for Entrepreneurship over five summers and found that ten percent had started new businesses and, of these, 75 percent reported that the course had a large influence on their decision.[91]

In addition, 45 states now have Small Business Assistance Centers funded by the U.S. Small Business Administration and usually located within their universities. Some of these draw upon the expertise of faculty but are independent entities intended to assist small and new businesses within the community. For example, the Northern Economic Initiatives Center at Northern Michigan University in three years has drawn upon 129 university faculty, students and staff to commit 12,000 hours to projects ranging from engineering consulting and help with advertising to auditing and running conferences.

No amount of training can guarantee an entrepreneur success. But most businesses fail, it appears, not because the basic idea was unsound but because of the entrepreneurs' "incompetence,

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[87] Bob Coleman, "Enterprise High," *INC Magazine*, September 1984.

[88] Vocational teachers were trained by Northern Michigan University's Department of Education which disseminates material and works with local chambers of commerce.

[89] Rosenfeld, Op.Cit., 1984.

[90] *The Wall Street Journal*, March 4, 1985.

[91] Stephen Robinett, "What Schools Can Teach Entrepreneurs," *Venture*, February 1985.

lack of managerial experience, and unbalanced experience."[92] Most loan applications are rejected because applicants cannot demonstrate that: 1) they have viable projects; and 2) they have the skills needed to manage them.

Education can help people evaluate risks and master the mechanics of setting up and managing a business. It can also teach some people that they are not cut out to be entrepreneurs. The pedagogical approach is defended by George Kanahele, founder of HETADI, because it:

> ...makes the course immediately and personally relevant; and it gives each person a concrete project as a goal. Psychologically, it is the litmus test for determining how committed a person is to the training and to getting into business. Intellectually, it is a very demanding task that forces a person to think in a logical manner through the steps that he or she will have to take in order to launch a successful venture. In the process, it also helps the fledgling entrepreneur make as many mistakes as possible but to do so on paper and not when it is too late.[93]

There are a growing number of successful models:

Indiana's Self-Employment Project to improve the management skills of former farmers interested in starting new businesses. A private firm was hired to offer the assistance—which reflected the extensive self-employment experience of former farmers. The contractor was paid up to $4000 for each of the 55 original enrollees who successfully created a business.

The Women's Economic Development Corporation (WEDCO) is a Minneapolis-based not for profit corporation that helps women—mostly low-income women—develop business plans and secure financing for new businesses.[94] Founded by four women entrepreneurs, WEDCO is supported partly by a local bank so that clients have access to private credit and partly by foundations and fees. Since its inception, WEDCO has helped launch 600 new businesses and expand 300 existing ones, generating over 1000 jobs. The average capitalization required for these ventures was only $4,300. One-third of those helped were living in poverty—although there were no income qualifications for participants.[95]

The Hawaii Entrepreneurship Training and Development Institute (HETADI) proves that a pedagogical approach easily adapted to occupational education programs can assist entrepreneurs effectively. HETADI was set up in 1977 with U.S. Department of Labor funds to train low-income people to set up businesses. It has assisted over 3000 people in the U.S., Africa, and Asia. During the first class, participants describe their proposed ventures. About 50 percent drop out

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[92] For example National Federation of Independent Businesses, *Report on Small Business*, Washington D.C., 1981, and Lawrence Litvak and Belden Daniels, *Innovations in Development Finance*, Washington D.C., Council of State Policy and Planning Agencies, 1981.

[93] George Kanahele, "Entrepreneurship Development as a Tool of Employment Policy," in Robert Friedman and William Schweke, eds., *Expanding the Opportunity to Produce*, Washington D.C., Corporation for Enterprise Development, 1981.

[94] Roger Vaughan, "Eat More Salsa," *Washington Monthly*, May 1988, and Friedman, Op.Cit.

[95] For example, two sisters, both working in low-paying jobs they disliked, had a salsa recipe popular with friends. They needed credit to go into business but were refused by local banks. With help from WEDCO, which included staff role-playing bankers while the sisters applied for a loan, they put together a business plan good enough to secure a $18,825 loan from First Bank Minneapolis. In the first six months, they sold over $300,000 of salsa and other foods, working long hours but finding the effort rewarding.

because their ideas are impractical or because they lack the commitment. Those remaining meet weekly for three months preparing business plans for their enterprises. One-half of those completing the course set themselves up in business and have enjoyed a higher survival rate than comparable very small businesses set up by the population at large.[96]

State Support of Research and Technology Transfer Programs

According to a survey in early 1988, 31 states have initiated programs to support university based research that has the potential for commercialization, 33 have invested directly in building research centers to advance applied research in areas identified as of strategic importance to the state's economy, and 28 have created technology transfer programs to speed the commercialization of research developed in state universities.

Research programs have, increasingly, tried to harness the capacities of university faculty to strengthen local industry or to spawn new enterprises. One of the first targeted research programs was the Microelectronics Innovation and Computer Research Opportunities (MICRO) program in California. It was designed to get university researchers working more closely with business on applied research that might lead to new products. As an incentive to get researchers to seek out business research opportunities, MICRO offered to match any microelectronics research grant made by a California business to a University of California faculty member.[97] Its budget has grown from $1 million in 1981 to $4.4 million in 1988.

The University City Science City (UCSC) in Philadelphia is a jointly-owned consortium of universities, colleges and health institutions—funded by the sale of stock in these institutions. It operates a research park, undertakes joint research, and manages an advanced technology center financed by the Ben Franklin Partnership (see below).

Whether these initiatives distort the research process—as some critics have alleged, simply switch public for private funding—as others have accused, or stimulate economic development, as their supporters believe—is not yet known. After reviewing several federal research programs, economist Edwin Mansfield offered five guidelines for public research strategies:

> First,...the program should be neither large scale nor organized on a crash basis. Instead, it should be characterized by flexibility, small-scale probes, and parallel approaches.
>
> Second, any temptation to focus the program on economically beleaguered industries should be rejected. The fact that an industry is in difficulty...is no justification for additional R and D. More R and D may not have much payoff there, or, even if it does, the additional resources may have a bigger payoff elsewhere.
>
> Third,...the government should avoid getting involved in the latter stages of development work...this is an area where firms are more adept than government agencies.
>
> Fourth...potential users of new technology should play a role in project selection [as they do with MICRO].

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[96] Arthur Young Inc., "Evaluation Business Starts Among Graduates and Rejected Applicants in the HETADI Training Project Sponsored by the CETA Program of the City and County of Honolulu," Unpublished Report, July 27, 1982.

[97] Osborne, Op.Cit., 1988, p.38.

Fifth, it is important to recognize the advantages of pluralism and decentralized decision making [as the Ben Franklin Partnership does—described below]. Technological change is marked by great uncertainty. It is difficult to predict which projects will turn out best.[98]

Incubating Businesses

Incubators for new businesses have become as popular during the 1980s as industrial parks were in the 1960s. Several universities—with state support—have created facilities that can be divided flexibly among new business tenants (from 500 to 10,000 square feet). The university usually intends to generate income as a landlord and also to retain key science and engineering faculty by allowing them to work in their enterprises near campus. Several universities are now engaged in business development.

The first university-based incubator formed in collaboration with the state was by Rensselaer Polytechnic Institute in Troy, New York in 1980. A state-owned abandoned building was turned over at low cost and within four years, it was the home of 22 companies—most headed by university faculty, students, or graduates. The University rarely invests directly in the enterprises but tries to put promising ventures in touch with potential investors.

The largest—and perhaps the most imitated—incubator program and new business development initiative is Pennsylvania's Ben Franklin Partnership. The program operates through four regional advanced technology centers—each focusing on one or two technology areas (such as robotics, CAD/CAM, microelectronics, biotechnology, and even manufacturing in space). Local sponsors—including universities, local governments, and private non-profit organizations demonstrate the local need for an incubator, define its purpose, develop marketing plans, and raise local funds, which the Partnership matches. In its first four years the Partnership funded 1,500 projects—including about 30 incubators—involving 128 of the state's 135 higher education institutions. Ben Franklin served as the model for programs in Ohio and New Jersey (whose programs were both named for Thomas Edison), Michigan, and several other states and local governments.

Washington University, Missouri, has created a private venture capital fund to create new ventures based on the innovations developed by its faculty. Royalties are shared between the private investor, the university and the innovator. The explicit purpose is to retain the teaching and research services of their best faculty—who are excluded from heading the new venture.

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[98] Edwin Mansfield et al., *Technology Transfer, Productivity, and Economic Policy*, New York, W.W. Norton, 1982, p.225ff.

EDUCATION TO REDUCE POVERTY

> *The immunity of poverty and unemployment to sweeping national solutions is what makes state governments so important to the search for less ambitious, more realistic solutions to the problem. But even at the state level there is no one way that a state can create new opportunities for a hundred thousand poor people. What state government can hope to find, however, is a hundred different ways to create new opportunities for a thousand poor people.*
> *It is a task that demands an ability to cope with frequent frustration and to take encouragement from small victories. It requires a fair degree of humility and above all patience. Like the builders of a cathedral, those who would create a new structure of opportunity face a life of slow cutting on hard stone.*
>
> Hugh O'Neill, 1985

Lack of education attainment (number of years completed) or low levels of achievement (competence on tests) often characterize people who suffer long-term, chronic poverty.[99] Education and training are probably the most important tools in raising the incomes and improving the employability of the working poor. The "long-term" working poor are less educated and have fewer marketable skills than their more affluent neighbors.[100] Many are aware that their lack of skills is the major barrier to earning more.[101]

Yet, traditionally, few poor people enroll in formal education or training programs other than those created especially for them. Some may feel unqualified to enroll, unable to cope. Others may be unaware of what programs are available. From the experience of people who have passed through training programs and found no work, many will have little confidence in the relevance of training in the labor market. Some undoubtedly cannot afford to enroll. And, until welfare reform in 1988 , those receiving welfare feared the loss of benefits if they engage in full-time education or training.

States are Marketing Education and Training More Widely

Several states have encouraged the poor to enroll in mainstream education programs. Employment services rarely offer a comprehensive list of local public and private education and training opportunities, and the extravagant claims made by some proprietary institutions discourage confidence. In addition to assessments of their own abilities, people can benefit from information including: 1) the placement rates and earnings of graduates from different programs and institutions so that they can reconcile their own aspirations with a realistic picture of the local labor market; 2) costs and requirements for enrollment and graduation in each program; and 3) a "how-to" guide to financial aid programs. Despite the importance of these data, no state yet provides a comprehensive—and comprehensible—information package covering all public and private education

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[99] In the poorest 100 rural counties, only 41 percent of adults have finished high school, compared with 69 percent in the richest counties, see Elizabeth Morrissey, *Characteristics of Poverty in Non-Metro Counties*, Washington D.C., Economic Research Service, U.S. Department of Agriculture, 1985. As much as three-quarters of differences in average earnings between blacks and whites can be explained by differences in education level--see James Smith and Finis Welch, *Closing the Gap: Forty Years of Economic Progress for Blacks*, Santa Monica, The RAND Corporation, 1986.

[100] Friedman, Op.Cit.

[101] Ibid, chapter 3.

and training opportunities. Some demonstration programs are tackling the difficult task of linking training programs, welfare programs, and Employment Services.[102]

If the state encourages competition among education and training institutions—by allowing people (and employers investing in their workforces) greater choice and by publishing performance data, the institutions themselves will market their programs more aggressively.

In Washington State, Carol Sasate has established HOME (Helping Ourselves Means Education) supported in part with state funds.[103] HOME runs counselling sessions for low-income women that assess their needs and explain the different programs they can use. It has helped more than ten thousand to enroll in further education.

Maine has successfully marketed educational opportunities to public assistance recipients through the Work Employment, Education, and Training (WEET) program set up in 1981. WEET provides employability assessment, counseling and plan development, referral to training and education, support groups, job search, On-the-Job-Training contracts, and help with child care, transportation, and related services. From April 1982 to January 1985, WEET helped 3,287 AFDC recipients find jobs at an average entry wage that rose from $3.49 to $4.38 per hour. WEET enrolled another 2,620 recipients in training and education courses, raised the number of AFDC recipients passing General Education Development (GED) exams annually from 72 to 171, enrolled 319 in post-secondary vocational technical institutes, and more than doubled the number attending the University of Maine from 269 to 648 by excluding counting student loans as an asset.

States Are Improving Access to Finance

Many training programs are available to the poor at little out-of-pocket cost. But other programs may cost from several thousand dollars for short-term programs, to nearly $10,000 in out-of-pocket expenses and $20,000 in foregone income for a two-year associate degree at a proprietary college. Even limited costs may prevent poor people from investing in themselves. They cannot easily borrow because they lack collateral. As a result, the limits on federal college grants and loans has led to a sharp decline in the share of low-income students in freshman classes.[104] At the same time, employers are reluctant to train their workforce in widely marketable skills because employees can move on to other firms before they have recovered their investments. Some states, therefore, are extending financial aid.

New York State has established a tuition assistance program for dislocated workers that provides up to $1500 to approved training providers for each (JTPA Title III) eligible person enrolled in a program leading to employment.[105] Michigan has created a tuition incentive program—paying the fees for community college courses for any disadvantaged person who graduates from high school.

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[102] National Alliance for Business, *Services Integration Pilot Programs*, Washington D.C., 1987.

[103] Peter Monaghan, "Former Welfare Mother Now Guides Others to Degrees," *Chronicle of Higher Education*, December 3, 1986.

[104] Emily C. Feistritzer, "One Reason Why Poor College Kids Aren't Getting Federal Loans," *The Washington Post Weekly Edition*, August 12, 1985.

[105] Kadamus, Op.Cit., p.12.

States are Making it Easier for Those on Welfare to Enter the Workforce

People receiving unemployment insurance or welfare have encountered barriers to enrolling in education and training programs. Welfare reform in 1988 removed some, but not all, of these barriers. Some states no longer count as income education grants, scholarships, and even loans not used directly for tuition. They reduce welfare benefit levels correspondingly.[106] An AFDC family with a member enrolled in college may have benefits reduced even if the student receives only enough aid to cover direct and indirect educational expenses.[107] The entire amount of student loans is counted as cash income for the purpose of determining Food Stamp allotments so that AFDC recipients who return to school lose most or all food stamps. States have taken two steps to ease these difficulties by changing their own regulations and by securing federal waivers: allowing welfare recipients to enroll in long-term as well as short-term education or training programs by revising "readiness to work," the "brief and infrequent absences" rules; and continuing benefits—including cash grants and services—while recipients enroll in training or education.

CONCLUSION

From kindergarten to graduate research, education programs are being used in non-traditional ways. If State Departments of Economic Development have not surrendered hegemony over state economies, Departments of Education, Vocational Education, Boards of Regents, and Departments of Labor have recognized the potential of re-packaging their budgets as economic development initiatives. Many governors and legislators have recognized the economic and political value of using their enormous education budgets as ways of creating new economic opportunities. Unfortunately, the effectiveness of these education initiatives is not being evaluated any more than were the effectiveness of traditional economic policies.

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[106] David Paul Rosen, "Resolving the Contradiction of Federal Public Assistance and College Opportunity Policies: Legislative Recommendations," Unpublished paper prepared for the National Commission on Student Financial Assistance, Oakland, CA, 1983.

[107] Nancy Mudrick, "The Interaction of Public Assistance and Student Financial Aid," Washington D.C., The College Board, 1980.

CONCLUSION

> *Economics is, on the one side, a Science of Wealth; and, on the other, that part of the Social Science of man's action in society, that deals with his efforts to satisfy his wants, in so far as the efforts and the wants are capable of being measured in terms of wealth, or its general representative, i.e., money.*
>
> Alfred Marshall, 1890

Economic development policy seeks to answer a fundamental question: *what is the best process for discovering opportunities?* Discovery occurs in several ways. Some are centralized—the gathering and processing of data in a federal research laboratory to uncover a treatment for AIDS, regulatory hearings before state agencies to determine the appropriate price for electricity. But most are decentralized—trial-and-error competition to find out which pizzeria best suits the tastes of local consumers or which manufacturer produces computers that capture consumer's expenditure.

Discoveries are shaped by innumerable factors, some of which we can reasonably predict and some we cannot. But, with some careful thought, we can understand a little about the discovery process, and, in doing so, we can identify ways in which public policy can help people invest in finding out—by helping them to finance their investments and by helping them to invest more wisely. Education can help all types of decisions.

Education has not replaced traditional approaches: rather, we are employing several—and not necessarily compatible—metaphors to understand economic development. Education requires a radical shift in thinking about development and in thinking about the role of the public sector. First, education programs are decentralized—much more decentralized than traditional development strategies. Education policies address all types of decision-makers, not simply those making investments in plant and equipment for major corporations. Education is also decentralized in that much discretionary power over education programs rests with local communities and with individuals—not with state or federal agencies.

Education also offers few short-term rewards. Politicians cannot count on the few ribbon-cutting ceremonies produced by industrial recruitment campaigns. Several governors and legislators, however, have proved adept at using education reform as an effective political platform.

Perhaps the most important way in which education can promote development is indirectly—by creating a well-informed citizenry that can manage the turbulent process of economic development. Although nearly everyone supports economic development in theory, few development policies attract more than a bare majority of support and many fail in the political arena because the creation of wealth creates losers as well as winners. In many cases, the losers are better organized or even more numerous than winners.

The pursuit of economic development, development officials argue, knows no enemies. This may be true in the abstract, but when confronted with a real development prospect, opponents will quickly appear. Economic development creates both winners and losers. Potential winners and losers will attempt to use the political process to favor or to oppose change. Education is central to resolving these disputes.

Those few entrepreneurs, and the people who invested in them, who introduce a highly successful innovation can reap enormous rewards from development. Steve Wozniak was propelled from being a gifted hacker to a multi-millionaire in a few years when the personal computer proved

to have a huge market. The thousands of employees hired by Apple, its suppliers, and its customers all benefitted.

But others lose. Those investing in the rival Osborne computer—which went bankrupt—or, less directly, those producing typewriters and other consumer goods which lost to PCs in the marketplace lost jobs, had their wages cut or received lower dividends on their shares. To many of these people the availability of new products probably seemed small compensation. Every step in the development process is incremental because each successful venture displaces existing activity.

The loss of assets is not merely an unpleasant side-effect of growth: it is a prerequisite.[108] A business failure is the learning experience from which better ideas are born. It often appears that development is a "zero-sum" game: if one community grows rapidly, it must be at the expense of other communities; if one business enjoys large profits, it is at the expense of its competitors or even its customers. But the overall result is a net increase in wealth. As economist George Stigler observed:

> Henry Ford made a lot of money making cars at one time, but that was a small advantage compared to the millions of people who were, for the first time in their lives, emancipated from common carriers and could live where they wanted, move at the hours they wanted to places they wanted.[109]

People suffered from Henry Ford's innovation—saddlemakers, blacksmiths, and carriagemakers learned new trades or went broke. Some would gladly have outlawed horseless carriages in order to preserve their jobs. But the overall cost of banning the automobile would have far exceeded the costs incurred by those who lost their jobs.

Losers will always try to use the political process to restore their losses if those losses are large. Even if those gaining from development outnumber those losing and the benefits of development outweigh the costs, those harmed may be better organized and more concentrated geographically. This may enable them to gain public subsidies to support ailing businesses, to restrict foreign competitors, or to secure direct financial compensation—severance pay or extended unemployment benefits, for example. They often succeed in persuading legislators that a particular economic advance is in fact a step backward and should not be taken. Consumers may be "protected" from new goods from abroad, employees from new, labor-saving technology, and members of professions from unlicensed competitors.

Perhaps the most difficult part of the political process is to manage change. While most of the victims of a plant closing will continue to believe that the event should never have happened, the stronger the economic education of the public at large, the less likely people are to support actions that threaten long-term damage to the community's capacity to adapt. "The art of progress," said Alfred North Whitehead, "is to preserve order amid change and change amid order."

In adopting a broader view of economic development—one in which learning plays a central role—we are pushed toward a more complex view of how the development process occurs. We can rely less on plausible, if misleading metaphors. The policies implied may be correspondingly broader. They are also less direct and their efficacy is more difficult to establish.

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[108] Joseph Schumpeter, *Theory of Economic Development*, Chicago, University of Chicago Press, 1926.

[109] George Stigler, *The Economist As Preacher and Other Essays*, Chicago, University of Chicago Press, 1984, p.47.

Each company that moves in is a visible victory for a state recruitment program, and a retention program can claim the whole economic base even if state activity had little to do with what happened. It is difficult to point to the economic gains attributable to raising reading scores, retraining workers, or reducing infant mortality rates.

Because of these difficulties, education has still not become "mainstream" economic development policy—despite the rhetoric of elected officials. When the National Governors' Association surveyed all 50 states in 1986, only nine state identified education and training as the major economic development issue they faced, and only 20 indicated that they were using human capital initiatives to support economic growth.[110]

In the same year, the Council of Chief State School Officers surveyed the 50 states and found that only nine state departments of education have any economic development strategies, and few are involved in the state's overall development activities. In part, this reflects the failure of many elected leaders to appreciate the vital role that education and training are playing. It also reflects the poor quality of economic education in many states. Few states, for example, include courses and programs relevant to the changing economic environment in high school curricula.

Economic Education is Neither Widespread Nor of High Quality

	Number of States where: Courses must be...	
Course	**Offered**	**Taken**
The Economy	39	24
Productivity	29	11
International education	25	7
Work ethic	24	8
Entrepreneurship	31	8
Career exploration	41	15

Source:National Conference of State Legislatures, **Education and Economic Growth,** Denver, CO., 1988.

The decentralized metaphor of development through investment in human capital will penetrate further into our models of the development process only when people's understanding of how their economy works is improved. And that requires better economic education. But the pressure for changing our economic metaphors is strong.

[110] Marianne Clark, *Revitalizing State Economies*, Washington D.C., National Governors' Association, 1986.